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*Canada, Railways and Transportation,
Royal Commission on, 1917*

REPORT

OF THE

ROYAL COMMISSION

on

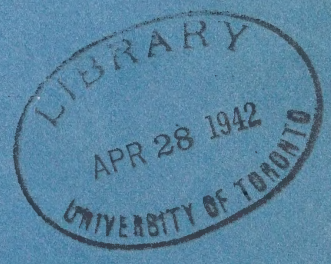
TO INQUIRE INTO

RAILWAYS AND TRANSPORTATION

IN

CANADA

PRINTED BY ORDER OF PARLIAMENT.



OTTAWA

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COMMISSION.

P.C. 1680.

CERTIFIED COPY of a Report of the Committee of the Privy Council, approved by the Deputy of His Royal Highness the Governor General on the 13th July, 1916.

The Committee of the Privy Council have had before them a report, dated 12th June, 1916, from the Right Honourable the Prime Minister, submitting that it became necessary at the recent session of Parliament to make provision for assistance by loan to the Grand Trunk Pacific Railway Company and to the Canadian Northern Railway Company in order that such companies might be enabled to meet current obligations and to provide for payment of interest on outstanding securities.

Having regard to the conditions and necessities of railway development in Canada the Prime Minister is of opinion that the situation should be considered in a comprehensive way and that a thorough inquiry should be made by a Board of the highest ability and experience.

The Prime Minister further submits that the inquiry should have reference to the following matters:—

1. The general problem of transportation in Canada.

2. The status of each of the three transcontinental railway systems, that is to say, the Canadian Pacific Railway System, the Grand Trunk Railway System (including the Grand Trunk Pacific Railway and the Grand Trunk Railway and their several branches) and the Canadian Northern Railway System, having special reference to the following considerations:—

- (a) The territories served by each system and the service which it is capable of performing in the general scheme of transportation;
- (b) Physical conditions, equipment and capacity for handling business;
- (c) Methods of operation;
- (d) Branch lines, feeders and connections in Canada;
- (e) Connections in the United States;
- (f) Steamship connections on both oceans;
- (g) Capitalization, fixed charges and net earnings having regard to (i) present conditions, and (ii) probable future development with increase of population.

3. The reorganization of any of the said railway systems, or the acquisition thereof by the State; and in the latter case the most effective system of operation, whether in connection with the Intercolonial Railway or otherwise.

4. Generally speaking, all matters which the members of the Board may consider pertinent or relevant to the general scope of the inquiry.

The Prime Minister therefore recommends as follows:—

That Alfred Holland Smith, of the city of New York, in the United States of America; Sir Henry Lumley Drayton, of the city of Ottawa; and Sir George Paish, of London, England, be the members of the said Board, of whom the said Alfred Holland Smith shall be chairman;

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That the Board be constituted under part 1 of the Inquiries Act, and that it shall have all powers and authorities which could be conferred under the authority of that Act as amended by chapter 28 of the Statutes of 1912, intituled an Act to amend the Inquiries Act;

That the Provincial Governments be respectfully requested to afford to the Board any necessary information and co-operation in the inquiry;

That all the departments of the Government shall afford to the Board and to all persons acting under its authority and by its direction all such assistance and co-operation in the inquiry as the Board may desire;

That the Board of Railway Commissioners for Canada, the Commission of Conservation and all other bodies of a like character under the jurisdiction of the Parliament of Canada, shall co-operate with and assist the Board in the proposed inquiry;

That the Board shall report its findings and conclusions with the least possible delay;

That a commission for the purposes aforesaid shall issue to the members of the Board above designated.

The Committee concur in the foregoing and submit the same for approval.

RODOLPHE BOUDREAU,

Clerk of the Privy Council.

P.C. 2567.

CERTIFIED COPY of a Report of the Committee of the Privy Council, approved by His Excellency the Administrator on the 21st October, 1916.

The Committee of the Privy Council have had before them a report dated 19th October, 1916, from the Right Honourable the Prime Minister, submitting that Sir George Paish has resigned his position as a member of the Board, appointed by Order in Council of the 13th July, 1916, to inquire into and report upon the general problem of transportation in Canada, etc.

The Prime Minister further recommends that William Mitchell Acworth, Esquire, Gentleman, of London, England, be appointed a member of the said Board of Inquiry in place of Sir George Paish, resigned.

The Committee concur in the foregoing recommendation and submit the same for approval.

RODOLPHE BOUDREAU,

Clerk of the Privy Council.

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(2) The mileage (excluding trackage rights) of the four large private operating systems was:—

	Miles.
Canadian Pacific.. . . .	12,900
Canadian Northern.. . . .	9,648
Grand Trunk.. . . .	3,556
Grand Trunk Pacific (excluding Branch Lines Co.).. . . .	1,964
	<hr/>
	28,068

(3) There were operated by other companies and Provincial

Governments.. . . .	6,366
	<hr/>
	37,434

Included in the mileage of "Other Companies" is the following mileage operated or controlled by United States corporations.¹

	Miles.
Great Northern.. . . .	575
Michigan Central.. . . .	381
New York Central.. . . .	103
Boston and Maine (including Maine Central).. . . .	41
Pere Marquette.. . . .	199
	<hr/>
	1,299

This is more than counterbalanced by Canadian companies' mileage in the United States, as follows:—

	Proprietary ¹	Leased. ²	Controlled.	Total.
Canadian Pacific.....	145	32	4,771	4,948
Grand Trunk.....			1,868	1,868
Canadian Northern.....	44	181		225
	<hr/>	<hr/>	<hr/>	<hr/>
	189	213	6,639	7,041

Revenue, Gross and Net.

For the year ending June 30, 1916, the gross earnings of the railways reporting to the Department of Railways and Canals, which include, in addition to Canadian mileage, the proprietary and leased, but not the controlled, mileage of Canadian companies in the United States, were \$261,888,654, or practically \$7,000 (6,997) per mile of road operated otherwise than under trackage rights.

¹ This list is not exhaustive and only gives important companies.

² These lines are essential parts of the parent systems, but organized separately for international reasons.

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For the principal systems, which together are responsible for 87 per cent of the total earnings, the gross operating revenues per mile operated during the year were as follows:—

Road.	Operating Revenue.	Average mileage (including trackage) operated during the year.	Per mile of average mileage operated during year.
	\$		\$
Canadian Pacific..	124,654,571	12,994	9,593
Canadian Northern..	35,476,275	9,702	3,657
Grand Trunk..	39,155,040	3,565	10,983
Grand Trunk Pacific (excluding B. L. Co.)..	6,963,188	1,968	3,538
Transcontinental..	5,798,516	2,002	2,896
Intercolonial..	15,686,662	1,553	10,101

The net operating revenues and the average per mile operated during the year were as follows:—

Road.	Net operating Revenue.	Per mile of average mileage operated during year.
	\$	\$
Canadian Pacific..	46,416,743	3,572
Canadian Northern..	10,232,088	1,054
Grand Trunk..	10,373,027	2,909
Grand Trunk Pacific (excluding B. L. Co.)..	1,060,346	539
Transcontinental..	429,455	214
Intercolonial..	2,363,478	1,522

In addition to the revenues from rail transportation and services incidental thereto, the Canadian Pacific reported revenues from boat lines, commercial telegraphs, hotels, and news departments of \$22,834,095 gross and \$6,034,340 net.

Investment in Road and Equipment.

At the close of the year ended June 30, 1916, the investment in road and equipment as carried on the books of the companies or the Government was as follows:—

	Book value of road and equipment.	Miles owned	Per mile.
	\$		\$
Canadian Pacific..	530,788,978	7,779	68,233
Canadian Northern..	494,762,489	9,002	54,961
Grand Trunk..	424,169,310	3,331	127,340
Grand Trunk Pacific (excluding B. L. Co.)..	192,312,218	1,962	98,018
Trancontinental..	159,881,894	1,810	88,332
Intercolonial..	116,234,204	1,514	76,773
	1,918,149,093	25,398	75,524

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The book value of road and equipment is not to be regarded as accurately representing the actual cost of the property. "Cost of road and equipment," as set up on the books of a company, frequently represents not the actual cash outlay but the par value of the bonds and shares which have been issued to obtain cash or property. "Cost of road and equipment" may therefore include the par value of securities issued to obtain money for interest during construction, discounts on securities sold, and other items not strictly construction cost. And it may include sums to offset the par value of securities which have been issued for other than a cash consideration. For example, the Grand Trunk Pacific has \$25,000,000, and the Canadian Northern has \$100,000,000 of ordinary stock outstanding, neither of which issues represents more than a nominal sum of actual cash paid in. On the other hand, the Canadian Pacific Railway accounts shows that this company has received premiums of \$45,000,000 upon the \$260,000,000 of ordinary stock sold. These premiums are invested in the general asset of the company in the same manner as the proceeds of the stock itself.

If the sums mentioned for the Grand Trunk Pacific and Canadian Northern be deducted from the book account "cost of road and equipment," the statement becomes:—

	Cost of road and equipment.	Miles owned.	Average per mile.
	\$		\$
Canadian Northern.....	394,169,130	9,602	43,786
Grand Trunk Pacific.....	167,312,218	1,962	85,276

Return on Capital.

The net operating revenues have already been stated. Taking in taxes, rents, and similar items, which relate to operation, the relation of the net operating income to cost of road and equipment comes out as follows:—

Road.	Net operating revenue.	Net rents, hire of equipment, taxes, etc.	Total.	Per cent on property investment.
	\$	\$	\$	%
Canadian Pacific Railway	46,416,743	2,109,477 Dr.	44,307,266	8.34
Canadian Northern	10,232,088	1,241,465 Dr.	8,990,623	2.28
Grand Trunk	10,373,027	469,926 Dr.	9,903,101	2.33
Grand Trunk Pacific (excluding branch lines)	1,060,346	1,153,283 Cr. (Estimated)	2,213,629	1.15
Transcontinental.....	429,455	1,371,070 Dr.	941,615 Dr.	Deficit.
Intercolonial.....	2,363,478	167,214	2,196,264	1.88

With the exception of the first-named railroad, the return is so low as to afford further support for the view which we have suggested, that the country has built more railroads than can be justified on commercial grounds.

Government Aid in General.

The geographical location and climate of Canada are such that easy communication with the settled districts had to be established before any large permanent population could find means of support in the newer country. Without railways the rich grain-growing provinces of the West would have remained a hunting and trapping district, or at best a grazing section, because it would have been impossible to get out the grain which constitutes the chief product of those provinces. The people have been liberal in promoting railway building in advance of their profitable operation on a commercial basis. Great grants of land have been given to the two principal systems in the West. But without these railways the land would have been practically valueless. Cash aid has also been voted liberally. The total for this purpose up to June 30, 1916, is reported as \$116,000,000 by the Dominion Government, about \$30,000,000 by the provinces, and \$12,000,000 by municipalities. The Governments, both National and Provincial, have frequently entered directly upon construction projects when private capital could not be found; as for instance the Dominion Government in the case of the Hudson Bay Railway, and the Ontario Government in the case of the Temiskaming and Northern Ontario. They have also often extended large assistance to private companies by direct loans, by purchase of their securities, and by guarantees. These have grown to large sums. By far the largest part, though not all, of the aid of this kind is to be found in the principal systems. We give the detail as follows:—

Government Aid to Canadian Northern.

According to the reports of the Statistical Bureau of the Department of Railways and Canals, the roads composing the Canadian Northern System had received assistance up to June 30, 1916, as follows:—

(1) Subsidies:

Paid by Dominion Government.. . . .	\$31,286,720
“ Provinces.. . . .	6,821,724
“ Municipalities.. . . .	765,704
	<hr/>
	\$38,874,148

The total amount reported by the Canadian Northern Company, as received upon the foregoing account, is \$33,917,175. The difference is explained by the fact that the Government reports comprise aid granted to companies now included in the Canadian Northern System prior to their inclusion.

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To His Excellency the Governor in Council:

The Report of the Royal Commission appointed to consider the general problem of transportation in Canada.

MAY IT PLEASE YOUR EXCELLENCY:

We, the Commissioners appointed by Order in Council dated July 13, 1916, to inquire and report on the Railways of Canada, have the honour to present our report to Your Excellency.

The subject matter of the reference to us is as follows:—

1. The general problem of transportation in Canada.
2. The status of each of the three transcontinental railway systems, that is to say, the Canadian Pacific Railway System, the Grand Trunk Railway System (including the Grand Trunk Pacific Railway and the Grand Trunk Railway and their several branches) and the Canadian Northern Railway System, having special reference to the following considerations:—
 - (a) The territories served by each system and the service which it is capable of performing in the general scheme of transportation;
 - (b) Physical conditions, equipment and capacity for handling business;
 - (c) Methods of operation;
 - (d) Branch lines, feeders and connections in Canada;
 - (e) Connections in the United States;
 - (f) Steamship connections on both oceans;
 - (g) Capitalization, fixed charges and net earnings having regard to (1) present conditions, and (2) probable future development with increase of population.
3. The reorganization of any of the said railway systems, or the acquisition thereof by the State; and in the latter case the most effective system of operation, whether in connection with the Intercolonial Railway or otherwise.
4. Generally speaking, all matters which the members of the Board may consider pertinent or relevant to the general scope of the Inquiry.

Sir George Paish, one of the original commissioners, was, owing to ill-health, unable to serve on the Commission, and on October 31, 1916, his formal resignation was received and Mr. William Mitchell Acworth was appointed in his place. Mr. Acworth landed in America early in December and joined in our work.

In September and October two of the commissioners, the Chairman Mr. Alfred H. Smith, and Sir Henry Drayton, spent some weeks inspecting the railways, travelling upwards of 10,000 miles, visiting all important points from Halifax to Vancouver and

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Prince Rupert, and taking the opportunity of meeting and conferring with many representative citizens. We desire to express our appreciation of the manner in which the officers of the various companies facilitated our journey and assisted us to obtain a knowledge of local conditions.

We have had a physical examination made, in such detail as circumstances have permitted, of the railways of the Canadian Northern and the Grand Trunk Pacific, by a corps of engineers under the supervision of Professor Swain of Harvard University and the Massachusetts Institute of Technology. His report is given in Appendix A.

In addition to the information which we have obtained from our own inquiries and inspections and those of our staff, we have received voluminous reports and statistics from the different companies in reply to our inquiries on specific points. Two of our number have held formal hearings in Toronto into the affairs of the Canadian Northern Railway Company, and in Montreal into the affairs of the Grand Trunk and Grand Trunk Pacific Companies.

Since Mr. Acworth's arrival we have frequently met in Ottawa and in New York for discussion of the remaining matters referred to us. We have taken the situation as it is, and find ourselves in agreement as to the necessity for constructive aid to bring the railways through the present crisis. We differ, however, as to the extent and method of Government help desirable, and as to the increase and character of Government liability and interest now and for the future. It has, therefore, been found necessary to submit a report of the two concurring commissioners, with a brief statement of the minority recommendations. They will be found herewith.

Respectfully submitted,

A. H. SMITH,
H. L. DRAYTON,
W. M. ACWORTH.

Report of Sir Henry L. Drayton and Mr. W. M. Acworth.

Introductory.

This Commission is instructed by the Government to report on the "general problem of transportation in Canada, with the least possible delay." Under these conditions it has been clearly impossible for us to set on foot and await the result of exhaustive inquiries, and to elaborate in full detail a scheme based thereon. We believe that we shall best carry out the purpose which the Government had in mind in appointing us, if, after setting out the general situation as we see it, and the general conclusions at which we have arrived, we sketch in broad outline the scheme of readjustment which we recommend for adoption, and then indicate the manner in which, if and when our recommendations are approved by the Government and Parliament, those recommendations should be brought into practical operation.

PART I.

CANADIAN RAILWAYS.

Mileage, Capital and State Aid.

On June 30, 1916, the operating mileage of railways in Canada was officially reported to be as follows:—

	Miles.
In operation, miles of first main track (less duplications through trackage rights)	37,484
Under construction, according to official reports and estimates	3,150
	<hr/>
	40,584

This mileage, which we take in round figures as 40,000 miles, is very great as compared to the population of Canada, assumed to be something like 7,500,000 at the present time. It far exceeds that of the United Kingdom or France, with populations, respectively, of 46,000,000 and 40,000,000. It is roughly equal to that of the German Empire, with 67,000,000 inhabitants, and of India, with more than 300,000,000 people.

It is only slightly behind Russia, with a very rapidly growing population of 170,000,000. Putting Canada alongside countries more nearly comparable, we find that Australia, with an area roughly corresponding to that of Canada, has 18,290 miles of line for 5,000,000 inhabitants. Argentina has 20,290 miles for the same population. To take yet another comparison, Canada has nearly one-sixth of the railway mileage of the United States; it has less than one-fourteenth of the population. Evidently, judged by the standards of other countries, the railway mileage of Canada bears a very high ratio to the population.

We may put the same thing in another way. The growth of the mileage has far outstripped the growth of the population. In 1901, with a population of 5,371,315, Canada had 18,140 miles of railway in operation; roughly, a mile of railway for every 300 inhabitants. In 1911, the population had increased 34 per cent to 7,206,643, while the mileage had increased by 40 per cent to 25,400 miles; a mile of railway to every 284 inhabitants. Since 1911, the population has, it is understood, not much increased, but the railway mileage open and under construction has grown to 40,584 miles. In other words, Canada has to-day, taking the present population as 7,500,000, only 185 inhabitants to support each mile of railway. Taking the four Western Provinces by themselves, there are only two-thirds of this number for each mile of railway. The United States have 400 inhabitants per mile of line; the United Kingdom, 2,000; Russia, 4,000. Even Australia has 274 inhabitants for each mile of railway; Argentina, 238. And Canada has, what none of these other countries have to a comparable degree, a magnificent internal system of natural waterways, which must always, so far as can now be foreseen, carry a very large proportion of the total traffic. Of course, if mileage be taken in relation not to population but to area, Canada, so far from being at the top, comes far down in the scale. But area means potentialities, not actualities. Population alone can supply traffic. That the railway mileage already built will be insufficient for the Canada of the future, we doubt not. The question which concerns to-day is the relation of existing mileage to the circumstances of the present and the proximate future.

These facts are fundamental, and must be steadily borne in mind in any consideration of the future of Canadian railways.

Apportionment of Mileage.

Of the mileage owned and in operation on June 30, 1916: (1) There were in the hands of the Dominion Government:—

	Miles.
Intercolonial.	1,514
Prince Edward Island.	275
Transcontinental.	1,810
	<hr/>
	3,599

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(3) *Land grants:*

	Acres.
By Dominion (excluding land repurchased)	21,634,190
By British Columbia	6,388,998
	<hr/>
	28,023,188
Land sales to June 30, 1916	16,541,056
	<hr/>
Land still in hand, acres	11,482,132

Proceeds of lands and townsites to June 30, 1916, \$123,810,124.

The company's report for June 30, 1916, shows net proceeds from land sales as \$68,255,803. The difference, it is understood, represents expenditure by the company for development projects, irrigation, hotels, etc., and, in some cases, dividends.

The unsold lands of the company are carried in its accounts at \$119,250,000.

Summary:—

Completed road and surveys, cost Government	\$ 37,785,320
Cash subsidies	66,905,481
Lands sold	123,810,124
	<hr/>

Total public assistance, direct and indirect \$228,500,925¹

Further, indirectly, the Canadian Pacific has had Government aid, the value of which cannot be determined, such as right to take public land free for railway purposes; various loans (since repaid); certain exemptions from taxes; admission of original construction material free of duty; and other concessions.

Government Aid to Grand Trunk.

According to Government reports, the roads now comprised in the Grand Trunk Railway Company's undertaking have received aid as follows:—

(1) *Subsidies:*

Dominion Government	\$ 3,423,699
Provinces	4,077,233
Municipalities	5,502,128
	<hr/>
	\$13,003,060

(2) *Loan:*

The Dominion Government made to the Grand Trunk Railway Company, many years ago, a loan, (interest on which has never been asked for or paid), amounting to	\$15,142,633
	<hr/>
Total	\$28,145,693

¹It must be noted that this sum is not net to the company, as it represents the gross receipts, while the company has expended large sums of money in irrigating a portion of the lands sold. As pointed out, however, the company values its unsold lands at \$119,250,000.

Government Aid to Grand Trunk Pacific.**(1) Subsidies:**

Provincial..	\$ 376,320
Municipal..	350,000
Total..	<hr/> \$ 726,320

(2) Other Cash Aid:—

Under the "implementing clause" the Dominion Government has paid to the Grand Trunk Pacific..	\$ 6,263,716
It has also lent upon or bought securities as follows:	
May, 1909, 4 per cent Prairie Section bonds bought at par..	\$10,000,000 ¹
August, 1913, 4 per cent debentures due in 1923, bought at par..	15,000,000 ¹
Loan of 1914, secured by pledge of \$7,500,000 of 4 per cent bonds..	6,000,000
1913-14, 3 per cent first mortgage bonds (bought from company)..	33,048,000
Direct investment of Dominion Government..	<hr/> \$70,311,716

Loans to the amount of \$8,000,000 were authorized by Parliament in 1916. Advances under this authority are not here included, but are referred to subsequently.

(3) *Guarantees.*—The Dominion Government has also guaranteed outstanding bonds of the Grand Trunk Pacific in addition to those actually held by the Government:—

First mortgage, 3 per cent bonds..	\$34,992,000
4 per cent sterling bonds of 1962..	8,440,848
	<hr/> \$43,432,848

Summary:—

Subsidies and other cash aid..	\$ 6,990,036
Dominion Government investment in securities.. . . .	64,048,000
Dominion Government guarantees..	43,432,848
Total..	<hr/> \$114,470,884
The Grand Trunk Pacific Branch Lines Company has also Provincial guarantees on bonds outstanding to the amount of..	\$ 13,469,004

¹ These securities are guaranteed by the Grand Trunk Railway Company of Canada.

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(2) *Land grants:*

Location.	Received.	Of which sold.
	Acres.	Acres.
Nova Scotia.....	150,000	150,000
Quebec.....	402,860	
Ontario.....	2,000,000	
Manitoba, Saskatchewan, Alberta.....	4,002,848	3,159,720
	6,555,708	3,309,720

Amount realized from land sales, \$16,603,295.

The company appraises its unsold lands at \$19,885,485, present value.

(3) *Guarantees.*—As at June 30, 1916, the company had outstanding securities bearing the guarantee of the Dominion or Provincial Governments as follows:—

Guaranteed by	Par value.
	\$
Dominion of Canada.....	104,613,247
Province of Alberta.....	18,950,361
" Saskatchewan.....	14,762,546
" Manitoba.....	25,501,865
" Ontario.....	7,859,997
" British Columbia.....	39,953,124
	211,641,140

The foregoing represents the bonds reported by the company as guaranteed and outstanding. Provincial reports indicate that additional guarantees have been made, especially by Alberta and Saskatchewan. These presumably are related to mileage on which the guarantees have not yet been earned. Some of these projects are apparently in abeyance, and may perhaps be abandoned.

(4) *Loans.*—The Canadian Northern has had direct loans from the Dominion Government:—

July, 1914, secured by mortgage.....	\$ 858,166
October, 1914, secured by deposit of \$12,500,000 of 4 per cent Government guaranteed debentures, included in above mortgage.....	10,000,000
June, 1916, secured by mortgage.....	15,000,000
	<hr/> \$ 25,858,166

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Summary:

Subsidies.....	\$ 38,874,148
Land grants (sold, \$16,603,295; realized on mortgage, \$17,776,514).....	34,379,809
Cash loans (interest not being paid).....	25,858,166
Securities guaranteed.....	\$211,641,140
Less Government guaranteed debentures held as collateral.....	12,500,000
	<hr/> 199,141,140
Total public assistance, direct and indirect....	\$298,253,263

The company has not realized par value for all the securities guaranteed; \$60,292,700 par value are pledged as collateral security for loans, of which \$100,000,000 have been, as stated above, lent by the Government; the balance has been lent by private investors.

Government Aid to Canadian Pacific.

Some time prior to 1880, the Dominion Government undertook the construction of a road that was designed to be a link in a transcontinental line. In that year the Canadian Pacific Railway Company was organized for the purpose of completing the line. The assistance given to the company by the Government comprises the following:—

(1) *Railroad handed over.*—The cost of road and surveys made by the Government, and turned over to the company free of cost, was \$37,785,320.

(2) *Cash aid:*

By Dominion Government to Canadian Pacific Railway Company.....	\$30,289,343
By Dominion Government to subsidiary companies....	13,129,873
By Provincial Governments to Canadian Pacific Rail- way Company.....	412,878
By Provincial Governments to subsidiary companies..	12,016,257
By municipalities to Canadian Pacific Railway Com- pany.....	464,761
By municipalities to subsidiary companies.....	4,632,422
By Dominion Government (by purchase back of land previously granted).....	10,189,521
	<hr/> \$71,135,055
Deduct loans since repaid.....	4,229,574
Total cash aid.....	<hr/> \$66,905,481

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introduced. In the main it has had to rely throughout its history on its own resources, and it has had for many years to compete with heavily subsidized rivals. While it was the pioneer in giving to Canada railway service, its shareholders have never had but very moderate dividends. We have felt this should be borne in mind when dealing with the question of the Grand Trunk Pacific, and it has had some influence on the recommendations which we make later on this subject.

Historical Development.

The railway history of Canada has gone through three distinct phases. In the first period, the Grand Trunk came into existence almost entirely as the result of the investment of private capital. It is comparable in this respect with the private railway companies of England and the United States.

In the second period, the Canadian Pacific was brought into existence and carried through its early difficulties by direct Government support and large financial assistance from public funds. As a result of this support and assistance, coupled with the rapid growth of Canadian population and wealth, and its own wise and prudent management, the Canadian Pacific has "made good." It has raised, without further Government help, hundreds of millions of new capital. Its common stock, which carries control of the property, represents an average of \$112.50 of actual cash put into the property for every \$100 of nominal face value. The shareholders have for years received handsome dividends; they have, out of operating surplus, invested \$100,000,000 in subsidiary undertakings; they have realized \$68,000,000 net from land sales, and they still possess land conservatively valued at \$119,000,000. Against no part of this total value has any capital been issued. To-day the Canadian Pacific stands as one of the wealthiest and financially strongest railway companies in the world; fully able to raise, on its own credit and on the most favourable terms, all the new capital which will be required to meet the demands for new development that the future will bring.

The Canadian Northern and Grand Trunk Pacific belong to the third period. Though the outward form of these two undertakings is that of a private company substantially they both rest on the responsibility of the Governments, National and Provincial. Their common stocks, which carry with them control of the respective properties, represent no practical cash investment, and both companies have failed to "make good." They are kept going at present only through large advances of public money.

We think the success of the Canadian Pacific Railway, as contrasted with the fact that the Grand Trunk Pacific and Canadian Northern have had to come back to the Government for help far beyond that originally contemplated, points a distinct moral. There was given to the Canadian Pacific at the outset, direct aid with a generous hand, and the aid was continued up to the point when the company could stand alone. The country knew what it was paying. Had it known how splendid a property it was building up, it would no doubt have stipulated for some share in the reversion. But even as it is, the people of Canada, in our view, have had good value

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Total Public Investment.

We tabulate the above figures for all the companies together and add to them the capital of the Government railways as shown in the Government account.

	Subsidies.	Proceeds of lands sold.	Loans out- standing or investment.	Guarantees outstanding.	Total.
	\$	\$	\$	\$	\$
Canadian Northern.....	38,874,148	34,379,809	25,858,166	199,141,140	298,253,263
Canadian Pacific.....	104,690,801	123,810,124			228,500,925
Grand Trunk Railway.....	13,003,060		15,142,633		28,145,693
Grand Trunk Pacific.....	726,320		70,311,716	43,432,848	114,470,884
Grand Trunk Pacific Branch Lines.....				13,469,004	13,469,004
National Transcontinental.....			159,881,197		159,881,197
Intercolonial.....			116,234,204		116,234,204
Prince Edward Island.....			9,496,567		9,496,567
Total.....	157,294,329	158,189,933	396,924,483	256,042,992	968,451,737

Not counting the loss of interest for many years upon the investment in roads operated by the Government, it appears that for the eight systems, in which the public is most interested, the people of Canada, through their Governments have provided, or guaranteed the payment of, sums totalling \$968,451,737. This works out at over \$30,000 per mile of road. But even this is not all. In addition, they have granted great areas of land as yet unsold and unpledged. They have undertaken the construction of other lines whose cost will be an important addition to this large outlay. Further, in the case of some of the companies included above, to which they have given or lent large sums of money to meet pressing needs, unlike private lenders, who would naturally have demanded a security charged in front of all previous investment, they have voluntarily accepted a charge ranking after the bulk of the private capital already put into the undertaking.

Proportion of Public Investment.

We pause at this point in the history to interpose some remarks on a subject to which we shall have to revert more at length hereafter. The above figures show that the Grand Trunk Pacific system, including its "branch lines" has obtained from the public authorities in cash or in guarantees of bonds, \$127,939,892, out of \$197,129,391² which is given as the total cost of the property; and the Canadian Northern has similarly obtained \$298,253,263 out of \$370,302,451, which is the maximum possible cash cost of the property as far as we have been able to ascertain it. On the other hand, the history shows that the Grand Trunk Railway proper has received much less assistance than either of the other two great companies with which it is in competition. The Grand Trunk began as long ago as 1851, before the Dominion of Canada came into existence, and before the modern policies of subsidies and guarantee had been

¹ Includes railroad turned over to company.

² As reported to Parliament, February 29, 1916. This figure includes \$26,938,139 interest during construction.

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for their money. In the early days of the Canadian Northern no direct aid was given other than a comparatively small grant of land, at the time almost valueless. Since then the company has received \$38,874,000 in subsidies; but this is very small in proportion to the direct aid given to the Canadian Pacific. Great sums of money were indeed guaranteed by the Dominion and the Provinces, but up to 1914 the company apparently met its obligations from its own resources. To the Grand Trunk Pacific, direct aid was indeed given to a considerable extent, but the financial scheme mainly relied on guarantees, first by the Governments, and secondly by the Grand Trunk Company. We do not think the Governments, either of the Dominion or of the Provinces, fully realized how serious was the liability which they were assuming. We do not think the companies realized how serious the position would be, if recourse had to be had to the guarantees. While we are not prepared to say that in no circumstances should guarantees be given, we do feel that a policy of guarantees on a large scale is a dangerous policy. It is evident that guarantees have been given in the past without adequate appreciation of the fact that they might fall due, and that, if they did, the burden would be grave. We recommend that in future no guarantees be given without being taken up into the books of the guarantor as a continuing liability, and without some financial provision being made against the possibility of their falling due.

Growth of Canadian Railways.

Till within the last decade, Canada was (omitting the Intercolonial Railway, and other smaller undertakings of only local interest) served by two main systems. They were:—

(1) The Canadian Pacific, stretching right across the continent, and having access to all important points both in the East and in the West, with control also of a considerable mileage in the United States, and in a very prosperous financial position.

(2) The Grand Trunk, whose original charter dates from 1851, with a strong hold on Eastern Canada, and also with important United States connections. The Grand Trunk had always met its obligations, though over a series of years the return to its shareholders had been but small. Westward the Grand Trunk only extended, in Canada, as far as lake Huron.

(3) But even ten years ago, the Canadian Northern, which had started as a local line in Manitoba in 1896, was beginning to build up in the Prairie Provinces a system which, in 1906, comprised more than 2,400 miles, and which now contains over 5,000 miles in these provinces. The Canadian Northern had grown rapidly with the growth of the western country, but had always earned sufficient net returns to take care of its obligations.

The Canadian Pacific had, it will be seen, the advantage of gathering its own traffic for itself and of keeping it in its own hand throughout. The other two companies were in a different position. The Canadian Northern had to depend for west-bound rail traffic on what the companies in the East, one of which was a rival, handed to it. On the traffic which it collected in the West, it lost the long haul to

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the East. It was not unnatural that the company should reach out to the East. For the same reason it was equally natural that the Grand Trunk Company should reach out to the West. And public sentiment which felt that the growth of the country justified and required more than one transcontinental line, undoubtedly sympathized with the companies' ambitions.

The natural solution of the question undoubtedly was that the Canadian Northern and the Grand Trunk should join forces and construct a line from North Bay, or its neighbourhood, to Port Arthur. Negotiations for the amalgamation of the two companies were, we understand, actually set on foot in 1903. Unfortunately they came to nothing; and each company set out independently to construct into the territory of the other. And a very large measure of Government help was given to them both, with the result—hardly, we think, with the deliberately contemplated object—of obtaining not merely two but three transcontinental routes. An uninformed and unreasonably optimistic public opinion undoubtedly supported this action at the time. We cannot, however, but feel that those responsible for the policy of the Grand Trunk and Canadian Northern Companies should have been wiser than the public.

PART II.

THE GRAND TRUNK SYSTEM.

The Grand Trunk scheme, first put forward in 1903 under two Acts of Parliament, both dated October 24, 1903, was for a main line right across the continent from Moncton to Prince Rupert. The portion of the line east of Winnipeg was to be built by the Government and leased to the Grand Trunk Pacific Company for fifty years certain, with a possibility of renewal. The portion west of Winnipeg was to be built by the Grand Trunk Pacific Company, with large Government assistance. The Grand Trunk Pacific was to build any necessary branches of the system both East and West, and was to operate the whole. The Grand Trunk was to hold, and in fact always has held, the entire share capital of the Grand Trunk Pacific. And the Grand Trunk has had full control of the undertaking throughout.

In fairness to the Grand Trunk it should be observed that the responsibility for the construction of the line from Moncton to Winnipeg, now known as the National Transcontinental, does not primarily rest on them. The proposal of the company, as originally formulated and submitted to the Government, was for a line from the Pacific through Winnipeg as far as North Bay. Government action was responsible for the line being carried eastward all the way to Quebec. And the further prolongation from Quebec to Moncton was added during the passage of the Bill through Parliament.

But though the Grand Trunk did not originate the National Transcontinental, it accepted full liability for it. The agreement between the Grand Trunk Pacific and the Dominion Government provided as follows: "In order to insure, for the pro-

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tection of the company as lessees of the Eastern Division of the said railway, the economical construction thereof in such a manner that it can be operated to the best advantage, it is hereby agreed that the specifications for the construction of the Eastern Division shall be submitted to and approved of by the company before the commencement of the work, and the said work shall be done according to the said specifications, and shall be subject to the joint supervision, inspection, and acceptance of the chief engineer of the company."

Upon this provision the Grand Trunk Pacific Company, in an official publication "The Grand Trunk Pacific; Canada's National Transcontinental Railway; 10th edition, January, 1912," comments as follows:—

"Since the rental payable by the company to the Government for the use of the Eastern Division is a percentage on the cost of construction, it will be observed that it is a matter of great importance to the company that this item 'cost of construction' shall be determined on the most economical basis consistent with a well-built railway, in which respect the foregoing provision contained in the agreement fully protects the company."

The company, then, appreciated that "cost of construction" was to it a matter of great importance, and considered that it was fully protected by the terms of the agreement. But as, in spite of the right of the company to approve specifications and the right of the company's chief engineer to supervise and inspect the work, the cost of construction of the National Transcontinental, which had been estimated at \$61,415,000 was permitted to reach \$159,881,197, the company objected to carrying out their bargain. And the Government, by accepting the company's refusal and commencing to work the line themselves, have in effect released the company unconditionally. The National Transcontinental is now part of the Government Railways. We make at this stage only two comments on what is past history: The one that the people of Canada have been generous to the shareholders of the Grand Trunk Pacific; the other that the Grand Trunk Pacific shareholders, in other words the Grand Trunk Company, have not shown such prudence and business foresight as would naturally encourage the Government to have confidence in their future management.

The refusal of the Grand Trunk Pacific to take over the operation of the line from Winnipeg to Moncton, with the result that the eastern half of the intended through route is being operated by the Government, has implied the temporary failure of the complete scheme as approved by Parliament. The line west of Winnipeg is at present being operated under the control of the Grand Trunk, the nearest point of whose rails is at North Bay, a thousand miles away. It would clearly be impossible for the Government to permit this as a permanent policy.

Grand Trunk Pacific Finance.

The original scheme for financing what was then known as the Western Division of the Grand Trunk Pacific, that is, the entire line as now left after the Government has assumed the responsibility for the Eastern Division, was as follows: The

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line was divided into two sections, the Prairie Section (914 miles) from Winnipeg *via* Edmonton to Wolf Creek, Alberta; and the Mountain Section (832 miles) from Wolf Creek to Prince Rupert. On the Prairie Section the Government guaranteed 50-year first mortgage 3 per cent bonds of the Grand Trunk Pacific, to the amount of \$13,000 per mile. On the Mountain Section, it guaranteed similar bonds to the extent of 75 per cent of the total cost, whatever that might thereafter be ascertained to be. The balance of the cost of both sections was to be found by the issue of 4 per cent mortgage bonds of the Grand Trunk Pacific guaranteed by the Grand Trunk Company. These latter were, in effect, second mortgage bonds though not so called. The Lake Superior branch was built by the company from the proceeds of its own bonds, with the help of subsidies both from the Dominion Government and from the province of Ontario.

First mortgage bonds were issued to the amount of \$68,040,000, and owing to subsequent arrangements with the Government which it is not necessary here to describe, the company obtained their full par value in cash. There were also issued \$20,169,000 of second mortgage bonds, \$7,583,000 Lake Superior Branch bonds, which together produced \$25,734,915.81 in cash. The \$93,774,915.81 proved entirely inadequate to complete the system. By an Act of 1906, as amended in 1913, the Grand Trunk Pacific was empowered to create 4 per cent perpetual debentures to the amount of \$50,000,000 for the purchase of rolling stock and the acquisition of branch lines. These debentures are guaranteed by the Grand Trunk Company and various amounts have been issued from time to time. On January 1, 1917, \$34,879,252.86 of them had been sold to the public, and had produced \$31,411,985.96 in cash. In May, 1909, the Government lent to the Grand Trunk Pacific Company \$10,000,000 at 4 per cent, charged by way of further mortgage upon the Prairie Division, and also guaranteed by the Grand Trunk Company. In June, 1913, the Government lent to the Grand Trunk Pacific Company a further sum of \$15,000,000, charged upon an equal amount of 4 per cent Prairie debentures, guaranteed by the Grand Trunk Company, and issued to the Government. In June, 1914, the Government guaranteed a further issue of not exceeding \$16,000,000 4 per cent Grand Trunk Pacific bonds. Part of these were sold; another portion was issued and pledged to the Government as security for a cash loan of \$6,000,000. The company has also raised \$9,095,512.05 by the issue of \$9,720,000 notes guaranteed by the Grand Trunk and further secured by the deposit of \$14,580,000 of debenture stock. In all the Grand Trunk Pacific Company had, up to the end of February, 1916, issued securities to the amount of \$179,782,100.86 and obtained therefor \$172,009,663.62 cash. Since that date the company has obtained from the Government further advances of \$4,397,741.43 and the Government auditor has passed for payment another advance of \$940,585.

The Grand Trunk Pacific Branch Lines Company has outstanding bonds for \$9,879,408, guaranteed by the province of Saskatchewan, and \$3,589,596 guaranteed by the province of Alberta; a total of \$13,469,004. For these bonds, \$12,688,544 in cash has been received.

The three railway companies composing the Grand Trunk Pacific Railway system (that is the Grand Trunk Pacific, the Grand Trunk Pacific Branch Lines Company, and the Grand Trunk Pacific Saskatchewan Railway Company), repre-

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sent construction expenditure, according to the report to the Government in February, 1916, of \$197,129,591. Owing to the long time during which the roads were treated as "under construction," no less than \$26,938,139 of this outlay is for interest. Since January 1, 1916, the line is officially in operation. It was open for traffic throughout sixteen months earlier and considerable sections were in operation at a much earlier period.

The interest charges on the funded obligations and Government loans of these companies are approximately \$7,200,000 a year. There are further debts of the Grand Trunk Pacific and subsidiary companies to the Grand Trunk for advances amounting to \$26,341,040.53 and for interest thereon; 6 per cent on which, added to the other liabilities, brings the total interest charges of the undertaking to \$8,846,544.20 a year. As a partial offset, the Dominion Government is under an obligation to pay, without recourse for seven years after completion, the interest on the Government guaranteed first mortgage bonds of the Mountain Section, amounting to \$1,655,121.60 a year. Further, the system has a certain amount of net income. For the year ending December, 1916, the Grand Trunk Pacific proper showed net income of \$1,899,052. This figure, however, included \$600,000, rent of the Lake Superior branch leased to the National Transcontinental, and \$1,305,741, hire of equipment. There was an operating loss of \$922,398 on the Branch Lines. All together, in spite of losses on operation, the system had a net income before charges of \$826,653.

Grand Trunk Liability for Grand Trunk Pacific.

The Grand Trunk Railway Company stands as guarantor of the following outstanding debentures and bonds issued and loans made to the Grand Trunk Pacific Railway Company:—

4 per cent Series A	Prairie Division	\$10,206,000	
4 "	" B Mountain Division	9,963,000	
4 "	Lake Superior Division	7,533,000	
4 "	Perpetual Debentures	34,879,252	
5 "	Secured Notes (secured by pledges of 4 per cent debentures)	9,720,000	
Canadian Government Loan of 1913		15,000,000	
" "	" 1909	10,000,000	
Total guarantees			97,301,252

In addition, the Grand Trunk Railway Company had at February 29, 1916, advanced to the several companies the following sums:—

Grand Trunk Pacific Railway Company	\$ 801,783 54	
" " " Branch Lines Company	13,369,537 83	
" " " Saskatchewan Railway Co.	214,500 00	
" " " Development Company, Ltd.	11,793,907 46	
Total advances		26,179,728
Total commitment of Grand Trunk Railway Company		\$123,280,980

In respect of these advances they hold the companies' notes to the amount of \$24,334,016.55.

We estimate the present annual liability of the Grand Trunk in connection with the Grand Trunk Pacific system to be considerably over \$5,000,000 per annum; and after January, 1923, it will increase to over \$7,000,000.

Grand Trunk Company's Proposal.

The Grand Trunk Company have, in the letter of their president, addressed to the Prime Minister and dated December 10, 1915, officially acknowledged that they cannot fulfil their obligations in reference to the Grand Trunk Pacific. The Grand Trunk Company have already obtained a tacit release from their contract in reference to the Transcontinental half of the original Grand Trunk Pacific undertaking. They have now, by their chairman's letter, put it on record that they are "at the end of their tether." They say that it is "quite impossible for them to meet the extra liabilities arising from the Grand Trunk Pacific Company." They propose to retire altogether from the concern; that in return for their handing over to Government the \$25,000,000 common stock of the Grand Trunk Pacific Railway, which is in their possession, but for which they only paid a nominal amount of actual cash, the Government shall not only relieve them of all liability for the interest on the securities of the Grand Trunk Pacific and subsidiary companies, and for any deficiencies of operating expenses of the Grand Trunk Pacific System, but shall "repay the Grand Trunk Railway Company any money advanced to the Grand Trunk Pacific or its Branch Lines and Development Company and other subsidiary companies."

We cannot think that this is a reasonable proposition, or one that we could advise the Government to accept. What would be thought if one partner in a business were to say to the other: "We entered jointly on an enterprise which we thought would be profitable. It has turned out the reverse. I propose that you settle with the creditors, pay out to me the whole of the capital I put in, and let me retire. Provided I go free, I am content that you make what you can of the business." We think the Grand Trunk Company cannot thus escape the consequences of its own action. We quite agree that the Grand Trunk Company cannot meet its Grand Trunk Pacific liabilities. But, if the Government is to relieve the Grand Trunk Company of liabilities which it voluntarily incurred, but which it now finds it impossible to meet, it is for the Government, not for the company, to fix the terms.

The Grand Trunk Case.

Having regard to the great importance of this question, not only to the Grand Trunk and Grand Trunk Pacific Companies, but also to the people of Canada, before deciding what to report in reference to the present position, and what to recommend for the future, we gave to the management of these companies full opportunity to state their case. We invited them to put forward every ground on which they based their application that the Grand Trunk Company should be relieved by the Government of their obligations in respect to the Grand Trunk Pacific, and have repaid to them by the Government their advances to the Grand Trunk Pacific Company and its subsidiaries, which otherwise would be uncollectable. And we also investigated the physical and financial position of the companies.

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In a letter addressed to Mr. Chamberlin, president of both companies, dated November 30, 1916, we wrote as follows:—

“Before looking into the Grand Trunk Pacific history from a parliamentary standpoint, I would like to have the company’s own statement so as to make sure that no injustice will be done it.

“Will you please write, or have Mr. Biggar write, giving the history of the project, and the underlying motives and objects to be served, as the company understood them, and say to what, if to any extent, the company was prevented or hindered in carrying out its programme? If Mr. Biggar has a series of draft Acts showing changes from time to time made before the adoption of the final Act that probably would be helpful.”

To this letter Mr. W. H. Biggar, K.C., general solicitor for both systems, in a letter received by us on December 12, replied as follows:—

Inception of the National Transcontinental.

“The construction by the Grand Trunk interests of a line into the western provinces appears to have been first suggested by Mr. Hays to the late Sir Charles Rivers Wilson, then president of the Grand Trunk, early in 1902. The correspondence between these two officials clearly shows that the chief purpose was the construction of a line to connect the Ontario lines of the Grand Trunk with the western provinces. The general outline of the scheme having received the approval of the directors of the Grand Trunk in London, Mr. Hays, on October 23, 1902, submitted it to Sir Wilfrid Laurier, then Prime Minister. On November 3, 1902, probably at the suggestion of Sir Wilfrid Laurier, a memorial was addressed to him signed by the late Mr. Hays and the late Mr. Wainwright. The following extracts from that memorial show what was contemplated:—

“Your petitioners desire to memorialize your Government in regard to the construction of a first-class line of railway from the northern terminus of the Grand Trunk Railway at, or near, North Bay, Ont., through to the Pacific coast, for the reasons and upon the conditions herein set forth:—

“First: That it is considered very desirable and in the public interest that there should be, without any unnecessary delay, a second transcontinental railway reaching from the Atlantic ocean to the Pacific ocean, in order that additional facilities may be provided for the large and growing business of the Northwest, which might otherwise find its outlet through American channels.

“Second: That your petitioners propose, as soon as authorized by your Government, to undertake the construction of such a line from North Bay, Ont., or some other point north thereof, to be defined, to the Pacific coast, the terminus to be at or near Port Simpson; with all necessary branches along the route, to be designated.

“Third: That your petitioners therefore ask that their application for authority to construct such a line of railway to be called the Grand Trunk Pacific Railway shall be granted.

“Eighth: That in order to provide for connection with the Atlantic seaboard, all the year round and through an all-British territory route, your petitioners will be prepared to enter into an arrangement with the Government for an interchange of traffic or other satisfactory agreement with the Intercolonial Railway at Montreal, or such other proposal as the Government may submit.

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"Ninth: That your petitioners would have the advantage of all the eastern connections, in Ontario and Quebec, of the Grand Trunk Railway, and by this means (on the completion of the transcontinental line) there would be established and opened up a complete system from ocean to ocean."

"Shortly after this memorial was presented, Mr. Hays instructed that notice of an application to Parliament for an Act to incorporate 'The Grand Trunk Pacific Railway Company' be prepared and published. I inclose a copy of the notice marked 'A.' In accordance with an apparent understanding between Sir Wilfrid Laurier and Mr. Hays that notice was, before publication, submitted to and approved by the then Minister of Justice, now Chief Justice of the Supreme Court of Canada. Subsequently the Bill, a copy of which marked 'B' is also inclosed, was prepared and forwarded to the Clerk of the House. In the early months of 1903, conferences were from time to time held between Mr. Hays and Mr. Wainwright on behalf of the company and Sir Wilfrid Laurier and members of his Cabinet, as a result of which Mr. Hays was asked to have the Bill amended to provide for the construction of a line from North Bay to Quebec. Not only do I personally know this to be the fact, but it is corroborated by a letter written to Sir Charles Rivers Wilson by Mr. Hays on March 16, 1903, in which he stated that 'at the request of the Government we have amended our Grand Trunk Pacific charter taking powers to build a line from Quebec to North Bay.' I inclose a copy marked 'C' of the notice published in accordance with that undertaking. When the Bill first came up for discussion before the Railway Committee of the House of Commons, such strong opposition developed that practically no progress was made at that meeting nor, in fact, at several subsequent meetings of the committee. While the Bill was thus under consideration, several members from the Maritime Provinces insisted that the eastern terminus of the line should not be Quebec but a point in the Maritime Provinces. So strongly was this view pressed that in the end the Government acquiesced and directed that the Bill be further amended to include the construction of a line from Quebec to Moncton. I attach, marked 'D,' a copy of clause 13 of the Bill reprinted by direction of the committee to give effect to this. Moncton was decided upon as a compromise, regard being had to the fact that both Halifax and St. John could be reached from there by the Intercolonial. As you will see, this clause as reprinted authorized the construction of branch lines to Fort William or Port Arthur and to North Bay. During all this time negotiations were still being carried on between the Government and the representatives of the company regarding the extent of and the terms upon which the Government should aid in the construction of the line. These resulted in the agreement of July 29, 1903, a copy of which forms the Schedule to Chapter 71 of the Statutes of 1903. The facts herein stated, and the enclosures, show how the scheme as first outlined by Mr. Hays came to be so materially changed. That his original intention was not carried out was, to my personal knowledge, not due to a change of view on his part but because he came to the conclusion that the Government aid essential to the construction of any Grand Trunk Pacific line could only be secured upon the terms set forth in the agreement of July 29, 1903."

It is not necessary to reprint the exhibits referred to in Mr. Biggar's letter. They fully establish his statement that the original advertisement, the draft Bill, and the notice of intention to apply for the Act, were all merely for the construction of a line from a point at or near North Bay, in the province of Ontario, and thence westerly. But Mr. Biggar's own letter shows also that the Grand Trunk Company, however reluctantly, did accept, as the only consideration on which they could get authority

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and assistance to construct and operate the Grand Trunk Pacific line from Winnipeg westward, the obligation to operate also the line from Winnipeg eastward. But this point is not of importance, as the company has, in effect, been released from the obligation that it assumed.

Mr. Biggar, however, confined himself to the Transcontinental section of the original scheme; and his letter contained no reply to our request for a more general statement as to the whole project, its motives and objects, and the manner in which the company might have suffered hindrance in carrying out its programme. We accordingly addressed a further communication to Mr. Chamberlin.

In a letter to us dated January 30, 1917, he wrote as follows:—

Letter from the President of the Grand Trunk.

“In replying to the first question asked in your letter ‘as to the effect on the Grand Trunk proper of the loss of the \$25,000,000 investment,’ it is perhaps necessary to repeat to some extent what has already been said from time to time on the subject.

“The advance to the Branch Lines Company—every dollar of it—represents money paid by the Grand Trunk in order to complete the lines, the bond issues having been found insufficient for the purpose, together with interest accruing. These branch lines were intended to be, and have been, important feeders to the parent company, the present financial position of which would have been much worse than it is had they not been constructed.

“The Grand Trunk Railway Company having furnished the money necessary to complete these lines would naturally look upon the confiscation of its investment as a crime. The money was put into it in good faith, in the belief that the Grand Trunk Pacific was largely a national undertaking. That the railway has turned out so far not to be a success is no fault of theirs, but can be attributed directly to the action of the Government in subsidizing competing lines and in many ways enormously adding to the cost of construction. There is not a shadow of doubt that had the course subsequently followed by the Government been known when application for the Grand Trunk Pacific charter was made, that road would never have been built.

“These are the facts as understood by the Grand Trunk directors and shareholders.

“The repudiation of this legitimate indebtedness in any arrangement made with the Government would not only injure the Grand Trunk Company’s credit, but might induce a spirit of hostile criticism on the part of investors in Grand Trunk securities in London and New York that might easily react upon the credit of the country.

“The foregoing remarks apply also to the advances to the Saskatchewan Railway.

“The Grand Trunk Pacific Development Company was organized with a view to obtaining, for the Grand Trunk Pacific Railway, terminals and town-sites, in order to induce settlers to take up land on the line of the railway. The whole of the common stock was owned by the Grand Trunk Pacific Railway Company. The enterprise was an endeavour to do at our own expense exactly what in the case of the Canadian Pacific and Canadian Northern Companies had been provided by the Government by giving land subsidies. The money advanced by the Grand Trunk Railway Company would have been repaid had it not been for the collapse of land values in the West, owing to the cul-

mination of the boom in real estate. The assets of the company are owned by the Grand Trunk Pacific Railway Company, and the operations of the Development Company accrue entirely to its benefit.

"To the second question asked as to the effect on the Grand Trunk proper should the operation of the Grand Trunk Pacific be left as it is and the former not be relieved from its guarantees, there can be only one answer: it would mean a receivership for the Grand Trunk Company, carrying with it the destruction of its credit for some time to come and the impairment of the credit of the whole Dominion.

"I can hardly add anything to lend additional force to the remarks already made in order to indicate the justice of our claim. If we have been guilty of too much optimism in the inception of the scheme, does not the same criticism apply to the Government which subsidized a railway system to compete with us, its success being dependent entirely upon a large influx of settlers in the West? While this expectation has not yet been fulfilled, it is not unreasonable to hope that it has only been deferred, and that eventually the Grand Trunk Pacific Railway system will prove an excellent national asset."

Mr. Chamberlin's letter in effect charges bad faith, unless the demands made by his company are acceded to by the country. "Confiscation," "crime," "repudiation of legitimate indebtedness," are grave words to be used by the president of a great company in an official communication referring to the action of the Government. The matter could not rest there. A serious situation was created, and one which in our view could not rest on mere affirmation or unsupported opinion.

If the company has been taken advantage of, or in any way deluded or defrauded by the Government, the fair name of Canada requires immediate redress. On the other hand, the country ought not to be called upon to accept, on the ground of good faith, a large loss and responsibility, unless this ground is well established. We accordingly arranged to hold a *viva voce* examination.

Hearing of Grand Trunk Officials at Montreal.

On this occasion, Mr. Chamberlin was given every opportunity to disclose all the grounds on which, as a matter of fairness, the Grand Trunk ought to be relieved of its obligations. No such case has been made out. Still less a case of "repudiation of legitimate obligations."

We have reprinted in full in Appendix "B" to this report, Mr. Chamberlin's evidence. In reference to the National Transcontinental, two new points were raised: (1) That the statutory obligation to route ocean traffic from and to the West via Canadian ports rather than via Portland is injurious to the Grand Trunk, and (2) that the delay in the completion of the western portion of the Transcontinental and the absence of a connection via North Bay caused the Grand Trunk to lose valuable traffic which they might have had in the years of heavy business before 1914. The answer as to (1) is that the company accepted the obligation when it took its Act, and that they have never so far asked to be relieved of it. In respect of (2) there is no ground for holding that the Government undertook any obligation to the company which it failed to carry out. There was indeed a provision in the National Transcontinental Act of 1904 that the Government should so construct the railway that the

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section between Winnipeg and Québec and that between Quebec and Moncton should be completed as nearly as practicable at the same time. But this was a statutory public obligation and confers no contractual right on the Grand Trunk Pacific Company. It may well be that in this and in other respects the Grand Trunk failed to procure the insertion in its agreement with the Government of stipulations which prudence would have recommended.

Grand Trunk Pacific Case.

In respect to the Grand Trunk Pacific proper, Mr. Chamberlin rested his case on the following main grounds: (1) That the Government had, in effect, gone into partnership with the Grand Trunk Pacific and that subsequently it had by subsidies and guarantees enabled a rival (the Canadian Northern) to come into existence; and that this action of the Government was, in view of its position as partner with the Grand Trunk Pacific, tantamount to bad faith; (2) that the simultaneous construction of the Canadian Northern in the same territory greatly enhanced the difficulty of obtaining labour, doubled its price, and also prolonged the period of construction; (3) that a new duty on steel rails was imposed after the Grand Trunk Pacific Act was passed, and that this added \$5,000,000 to the cost of construction. Mr. Chamberlin reiterated his strong belief, that his predecessors would never have gone into the scheme, had they known that they would be exposed to Canadian Northern competition.

As to (1) we cannot for a moment accept Mr. Chamberlin's contention. The Government was and is a government, not a mere private partner; and it retained and retains all the attributes of a government, including the power to charter new railways. We cannot suppose that the management of the Grand Trunk were ignorant of this fact when they took the Act constituting the Grand Trunk Pacific Company. Seeing, moreover, that the Canadian Pacific Railway Company had obtained special statutory protection against certain competition, we can hardly believe that their attention was not directed to the matter. Whether they applied for a similar protection and failed to obtain it, or whether they determined that it was useless to apply, we know not. But the point is not important. It is clear that the Government was entirely entitled to do what it did. (2) This no doubt was a fact, which was disadvantageous to the Grand Trunk Pacific; but the company took this risk, as it took other business risks, when it promoted its enterprise. (3) In this case also it is clear from the correspondence between the company and the then Prime Minister, exchanged in the autumn of 1905, that the Government in no way broke faith with the company. The Bill for the Act imposing the duty was introduced three months before the agreement between the Government and the company was signed. The company must therefore have been aware of the Government's intention, and it must be held to have taken its agreement, containing no provision for exemption, with full knowledge of this intention. According to the correspondence, the Prime Minister believed in 1905 that the question of a duty on rails had been more than once discussed at the time of the inception of the scheme; Mr. Hays, for the Grand Trunk Pacific, believed it had never been discussed at all.

The Commission's Conclusions.

Our inquiry has fully satisfied us that the Grand Trunk management was content at the time with the arrangement made; that it deliberately took its business chances, and proceeded with the undertaking. On the evidence there is nothing whatever to justify any charge of lack of fairness or good faith on the part of the Government in its dealings with the company. We have no hesitation in saying that, neither legally nor morally, have the promoters or shareholders of the Grand Trunk Pacific Company any basis for a claim that the country shall make good the Grand Trunk's mistaken investment in the Grand Trunk Pacific. Any aid given to them must be looked upon not as a matter of obligation but as spontaneous bounty.

The question is really so left by the Grand Trunk officials themselves. The record reads (page 176), as follows:—

“Sir HENRY DRAYTON: Doesn't it really come down to this, that the statements in your letter mean that in your view, in order to protect the finances of the Grand Trunk, and as a corollary to protect the finances of the country, the Government ought to relieve the Grand Trunk in regard to its investment; isn't that the whole thing?

“Mr. CHAMBERLIN: That is the whole thing?

“Sir HENRY DRAYTON: There is nothing else to it?

“Mr. CHAMBERLIN: Nothing else.”

The Parent Grand Trunk Company.

We turn to the position of the parent Grand Trunk Company. The proposal of its chairman is that, after they have been permitted to wash their hands of their Grand Trunk Pacific venture, they shall revert to their old position of a local road in Eastern Canada. We cannot think that this is in the interest of the country. We cannot accept the chairman's view that on these terms the company would be “able to fulfil the ever-increasing demands of the public bodies.” We do not think that “the credit of the Grand Trunk Company,” weakened as it must be by its Grand Trunk Pacific failure, could be “so maintained as to render possible the raising of fresh capital as required.” The financial management of the company is not such as to inspire confidence. A few weeks after the chairman's letter acknowledging that the company could not meet their Grand Trunk Pacific liabilities—with short term notes, issued to make advances to Grand Trunk Pacific companies, which those companies evidently cannot meet at maturity, outstanding to the amount of \$25,000,000—the Grand Trunk Company paid away \$2,500,000 in dividends. And the accounts for the same year, 1915, contain under the head of “capital expenditure” this entry:—

“Discount and commission:—

	£	s.	d.
On sale of 3-year 5 per cent notes.....	22,438	5	3
On sale of 5-year 5½ per cent notes.....	104,371	11	7
	126,809	16	10
	(Say \$608,604)		

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Grand Trunk Maintenance Expenditure.

Further, the Grand Trunk railway has not been and is not being adequately maintained. No depreciation fund has been created for equipment. Mr. Chamberlin's view, as shown by his evidence, is that 5 per cent on the cost of the equipment ought to be annually charged under this head. He says:—

“Take engines and cars, they are either worn out or out-of-date in twenty years.”

This item, according to his evidence, would have required an annual sum of \$2,750,000. He also states:—

“If we had \$25,000,000 now, it would put us in fine shape.”

The vice-president in charge of operation, Mr. Kelley, has direct responsibility for the plant. On Mr. Chamberlin's evidence being put to him, he agreed with it. He has since submitted to us a full report on the question of deferred expenditure. “Deferred expenditure” means, in plain English, expenditure which has not been made, but which, in view of those charged with the duty of maintaining the plant, ought to have been made.

We give below Mr. Kelley's summary in tabular form, but we do not think it necessary to reproduce all the supporting tables.

GRAND TRUNK RAILWAY SYSTEM—SUMMARY OF DEFERRED EXPENDITURES.

Rebuilding and reinforcing freight car equipment..	\$ 8,943,971 14
Rebuilding freight and passenger cars with safety appliances—	
Original estimate..	\$850,722 50
Already expended..	392,220 89
Balance to be expended..	\$ 458,501 61
Equipping engines with safety appliances—	
Original estimate..	\$ 17,828 00
Already expended..	553 68
Balance to be expended..	\$ 17,274 32
Deferred renewals in Maintenance of Way Department—	
In Canada..	\$ 6,182,672
In United States..	5,578,926
	\$ 11,761,598 00
Total..	\$ 21,181,345 07

MONTREAL, March 5, 1917.

On the single item of “rails” the “cash expenditure required to restore normal conditions” is reported as \$5,312,142. The cost of restoring ballast to normal conditions is reported as \$2,434,000.

With reference to the deferred renewals in Canada amounting to over \$6,000,000, it appears that they have accumulated during eleven years, 1906-16. During this period, in spite of the requirements of the property, and the claims of public safety, \$36,000,000 were paid out in dividends.

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Grand Trunk Capital Expenditure Required.

The \$21,000,000 dealt with above represent the money which the responsible officers of the company estimate to be required to put the existing plant into good normal condition. This is a revenue liability. But the existing plant is quite inadequate for existing traffic and requires large additions, for which new capital must be raised. The estimates of necessary capital expenditure submitted to us are as follows:—

Requirements for rolling stock, shops and machinery.	\$ 26,150,000
“ automatic block signals (main line in Canada only)	3,533,000
“ installing rock ballast crushing plant.	467,500
Total.	<u>\$ 30,150,500</u>

Putting together revenue and capital expenditure, we find that the Grand Trunk Railway, in the opinion of its own officers, requires over \$51,000,000 spent upon it to put it in a position to meet the requirements of its to-day's business. We see no reason to expect that under existing conditions this necessary money will be provided.

Effect on Canadian Business.

The effect on the country's business of deficient railway facilities is very serious. It is best shown in a period of stress, whether this stress is due to traffic congestion or is the result of bad weather conditions. February last gives a good example. The traffic was very heavy; embargoes were the rule and not the exception; weather conditions were worse than usual even in winter. The Grand Trunk had handled over the lines in its Ontario district in February, 1916, 318,532 cars. Last February it handled only 195,120. In its Eastern district in February, 1916, the company handled 210,914 cars; and in February of this year only 109,567 cars. This failure has occurred at a period when the demands on the country for food supplies, munitions of war and other articles used by the Allied armies, are extremely heavy. The situation is one which calls loudly and insistently for an immediate remedy.

In fairness to the Grand Trunk, it should be pointed out that congestion inevitably causes a falling off in the volume of traffic handled. Cars which are insistently required for the necessities of life, such as coal, perishable foods, live stock—and under present circumstances munitions—have at all hazards to be got forward. This necessitates greatly increased yard-work and switching. Preferential treatment of any one class of traffic always retards the general movement, and so adds further to congestion.

The Canadian Pacific is a well organized line. Its movement also fell off in Eastern Canada. Its two districts probably most nearly comparable to the Grand Trunk's Eastern and Ontario lines are its Ontario and Quebec districts. In February, 1916, the Canadian Pacific handled in its Ontario district, 92,255 cars, and in 1917 only 80,414 cars. In its Quebec district it handled, in February, 1916, 130,045 cars, and in February, 1917, only 96,464 cars. The resultant percentage decreases are for the Grand Trunk in its Ontario division 39.37 per cent, and for the

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Canadian Pacific Railway in its Ontario district 15·58 per cent. For the Grand Trunk in its Eastern Division, and for the Canadian Pacific in its Quebec district, the percentage decreases are 48·5 per cent and 25·82 per cent respectively.

At a later page of this report we refer in another connection to the fact that the Intercolonial has no terminals of its own at Montreal, but uses those of the Grand Trunk. The congestion of February was more a terminal congestion than a rail congestion, and the Intercolonial business out of Montreal was directly affected by the congestion of the Grand Trunk terminals. The Intercolonial movement in the First Division out of Montreal in February, 1916, amounted to 25,446 cars, and for the same month in 1917, to 15,628 cars, a percentage decrease of 38·58 per cent. The Intercolonial system, however, as a whole, had a movement, in February, 1917, of 51,311 cars, as compared with 66,510 cars in February, 1916, a percentage decrease of only 22·85 per cent, while the Grand Trunk for its entire system handled, in February, 1916, 652,358 cars, and in the same period in 1917, 402,133 cars, a percentage decrease of 38·35 per cent.

Commissioners' Recommendation.

The Grand Trunk Company's Board of Directors is 3,000 miles away. We cannot think that the state of affairs which our investigation has disclosed could have arisen, had the Board been on the spot. We are forced to the conclusion that the control of an important Canadian company should be in Canada. But this cannot be secured as long as the Grand Trunk Railway is owned by shareholders in England. We have come to the conclusion, therefore, that the control, not only of the Grand Trunk Pacific Company, but also of the Grand Trunk Company of Canada should be surrendered into the hands of the people of Canada. We recommend that the chairman of the Grand Trunk Company be informed, that it is only on this condition that the Government is prepared to relieve his company of the obligations which it has incurred in respect to the Grand Trunk Pacific. We recur later on in this report to these two companies, in order to set out our recommendations as to their ownership and management in the future, and as to the terms to be offered to the Grand Trunk shareholders.

PART III.

THE CANADIAN NORTHERN SYSTEM.

The system now known as the Canadian Northern began with the acquisition by Messrs. Mackenzie and Mann, in the year 1896, of a charter which had been granted in 1889 by the province of Manitoba to the Lake Manitoba Railway and Canal Company. The charter was for a line, 123 miles in length, from Gladstone on the Canadian Pacific to Winnipegosis. Construction was promptly begun, and

the line was opened in January, 1897. In the same year, 1897, Messrs. Mackenzie and Mann began to construct a line from Winnipeg to Port Arthur, known as the Manitoba and South-Eastern. Shortly after they constructed also the Winnipeg and Great Northern.

These three companies among them received land grants of 4,000,000 acres, and their bonds were largely guaranteed by the province of Manitoba.

In 1899, the Lake Manitoba Railway and Canal Company and the Winnipeg and Great Northern Company were amalgamated as the Canadian Northern Railway Company.

Thereafter, by leases, by absorptions, and by new construction, the Canadian Northern system grew fast in both directions, eastward and westward. As a system it never has had, nor has it to-day, any corporate existence. It was held together by stock ownership. The whole of the common stock of the Canadian Northern Railway Company itself was held by Messrs. Mackenzie and Mann. In the case of the affiliated companies the stock was held sometimes by the parent company; sometimes by Messrs. Mackenzie and Mann in their own names.

Throughout the history of the Canadian Northern construction, the company has depended on public aid, direct or indirect. The development in the twenty years since 1896 has gone through four distinct stages, though chronologically the stages overlap to a considerable extent. In the first stage, the company relied on Provincial guarantees. As it grew larger and more ambitious, it invoked and obtained aid from the Dominion. This was the second stage. In the third stage, the company, having become better known, raised large amounts, by the issue of Perpetual Debenture Stock, and later of Convertible Income Debenture Stock, on its own credit. At no period, as far as we have been able to ascertain, has any actual cash been obtained from the sale of the common stock, either of the parent company or of the constituent or subsidiary companies. With the exception of a French issue of \$4,000,000 in December, 1911, practically all the Canadian Northern money obtained by public subscription has been raised in London.

Canadian Northern Position in 1914.

In the fourth and last stage, in 1914, with heavy interest payments to be made and large construction contracts still open, the company found its own resources insufficient. It reported that it required \$100,000,000 to complete and equip its system; that it could raise on its own account \$58,000,000; and it appealed to the Government to find the balance.

The Government thereupon guaranteed an issue of \$45,000,000 of 4 per cent First Mortgage Debenture Stock. Of this issue, \$14,600,000 was sold in London at 91½ in July, 1914; and \$2,433,333 at 91 in February, 1915. There have been handed back to the Dominion Government \$12,500,000 as security for a cash loan of \$10,000,000. The remainder (except \$133,333 unissued) has been pledged as security for loans in New York. The total proceeds in cash from those sales and pledges were \$36,759,265. This sum having proved insufficient, in May, 1916, the Canadian Northern obtained from the Government a further loan of \$15,000,000 at the rate of 6 per cent repay-

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able on demand, to be used either for construction or to meet interest obligations. In addition, the Government undertook in September, 1915, to lend to the company the money necessary to pay interest either to the Government itself or to the public on the \$45,000,000 debentures. And to date, \$1,756,000 have been advanced for this purpose.

It will be observed that the first appeal to the Government was some months before the war. No doubt the stringency of the money markets of the world at the time made it more difficult than it otherwise would have been for the company to sell its securities. But that was not all. There was a further cause intrinsic to the company itself. It had gone ahead too fast and had undertaken various expensive schemes, which could not possibly carry themselves from the outset. The Canadian Northern Pacific, the Canadian Northern Ontario, and the Montreal Terminal especially implied very serious commitments. And the Prairie system which was self-supporting and yielded a profit, was not sufficiently developed to carry this weight.

The war, which at the outset paralyzed the business of the country, and which has practically closed the markets of the world to the issue of permanent securities, other than Government loans, for an indefinite time to come, further aggravated the situation. The company, when it applied to the Government early in 1914, reckoned on selling its \$45,000,000 guaranteed debentures for \$42,000,000. In fact it has only obtained from them \$36,759,265 in cash. It reckoned that other securities which it had to sell would bring in \$58,000,000; but many of them it has not been able to sell. At present the company is living from hand to mouth, and is nominally borrowing from the Government to pay interest on the Government's own loans.

Canadian Northern Annual Report for 1916.

The report to shareholders for the year ending June 30, 1916, appears to show that, after paying working expenses and fixed charges, the company has a deficit of only \$248,127. But this report does not disclose the fact that more than \$5,400,000 were paid for interest and charged to capital as part of the construction cost of a system which was all but completed.

According to an estimate submitted to us by the company the fixed charges for the year ending June 30, 1917, will be \$16,539,638. Of this the Dominion and British Columbia Governments have undertaken to pay \$4,514,507 under certain agreements. This leaves the company to find out of net revenue about \$2,500,000 more than it had available this year. An income of \$2,500,000 net implies an increase of at least \$9,000,000 gross. The company itself does not venture to expect a greater increase of gross than \$7,000,000.

The above agreements to pay interest are only for two and three years respectively. In the year ending June 30, 1920, the Government contributions will have fallen to \$627,000 and the following year they will have ceased entirely. The company's estimate for the year ending June 30, 1921, is that they will then have fixed charges amounting to \$18,300,000.¹ And this burden they will have to bear unaided. To carry it they would

¹This includes the interest amounting to \$2,250,000 on the new capital estimated by the company as necessary to be spent in the five years. This estimate we regard as quite inadequate. If so, the fixed charges will be correspondingly increased.

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need (assuming working expenses at the very moderate ratio of 70 per cent), a gross revenue of \$61,000,000. We cannot think it safe to assume that any such result will actually be attained.

Canadian Northern Estimate in 1914.

Without desiring to cast any reflection on the Canadian Northern Company, we think that those responsible for its management have taken, and still continue to take, an unjustifiably sanguine view of its possibilities. In 1914, when the company was applying to the Dominion Parliament for the guarantee of \$45,000,000 debentures to complete the undertaking, it submitted an estimate for the three years, 1916 to 1918, by Mr. Hanna, vice-president of the company, on what was described as "the very conservative basis of the percentage increase for the past five years." The company added that "inasmuch as a part of the mileage has been disconnected and confined to a local short-haul business, operation as a united trunk line system should result in a much greater per mile revenue."

We reproduce this estimate below:—

	For the year ending June 30.		
	1916.	1917.	1918.
	\$	\$	\$
Gross earnings.....	54,000,000	61,000,000	67,000,000
Operating expenses.....	38,880,009	43,300,000	46,900,000
Net earnings.....	15,120,000	17,700,000	20,100,000
Fixed charges, including interest on securities at present applied for.....	12,607,115	14,019,615	14,807,115
Surplus.....	2,512,885	3,680,385	5,292,885
Less interest on 5 per cent income debenture stock	1,250,000	1,250,000	1,250,000
	1,262,885	2,430,385	4,042,885

This estimate showed a margin, after paying \$1,250,000 per annum on the 5 per cent Income Debenture Stock, of \$1,262,000 in 1916.

The estimate was:—

Gross earnings.....	\$54,000,000
Net earnings.....	15,120,000

The facts have been:—

Gross earnings.....	\$35,476,000
Net earnings.....	9,373,000

And there has been a bumper harvest and it is acknowledged that the war has increased rather than diminished traffic. A further fact has been that for the year ending June 30, 1916, after passing the interest of \$1,250,000 upon the \$25,000,000 Income Debenture Stock, and after charging against capital interest to the amount of

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\$5,445,389 (less \$878,166 paid by the Government under its guarantee) in respect of "lines under construction," the company was still \$248,000 short of the money required to meet its bonded indebtedness.

We appreciate that circumstances which could not have been foreseen in the spring of 1914 have arisen to upset the estimates then made. The money was not immediately forthcoming. The full amount estimated as necessary was not obtained, and the terms were more onerous. Prices have gone up. Labour has been scarce and dear. The expected immigrants have not come. The company has sold its ocean steamers. The system, even to-day, is not in the condition that was in the minds of the company's officers when the estimates were made.

But making all possible allowances, we think that those responsible for the estimates of 1914, upon which Parliament acted, have incurred very serious responsibility.

Canadian Northern Estimate in 1917.

In January last the company submitted to us an estimate for the five years, 1917-21. This was as follows:—

	Year ending June 30, 1917.	Year ending June 30, 1918.	Year ending June 30, 1919.	Year ending June 30, 1920.	Year ending June 30, 1921.
	\$	\$	\$	\$	\$
Gross earnings.....	42,590,000	48,185,000	55,410,000	62,300,000	68,460,000
Operating expenses	31,090,000	34,790,000	39,895,000	44,200,000	47,920,000
	11,500,000	13,395,000	15,515,000	18,100,000	20,540,000

The estimate submitted to Parliament by the company for the year to June 30, 1917, was:—

Gross.....	\$61,000,000
Net.....	17,700,000

The revised estimate now submitted to us by the company is:—

Gross.....	\$42,590,000
Net.....	11,500,000

The estimate submitted to Parliament by the company for the year to June 30, 1918, was:—

Gross.....	\$67,000,000
Net.....	20,100,000

The revised estimate now submitted to us by the company is:—

Gross.....	\$48,185,000
Net.....	13,395,000

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We think the new estimate made for us, even though more conservative than the old, is still too sanguine. We see no reason to think that the traffic will increase at any such rate as that indicated. To assume a growth each year of about 11 per cent over the previous year, and simultaneously an operating ratio falling steadily from 73 per cent to 70 per cent, is only once more to invite disillusionment.

Comparison with Canadian Pacific.

We think the following statement of the facts of the last eleven years of Canadian Pacific history is instructive. The table shows for each year gross and net earnings per mile, and also the percentage of operating ratio:—

	*Gross earnings.	Net earnings.	Operating ratio.
	\$	\$	
1906	7,026	2,617	62·7
1907	7,890	2,765	64·9
1908	7,573	2,312	69·4
1909	7,726	2,324	69·9
1910	9,425	3,358	64·4
1911	10,072	3,548	64·8
1912	11,453	3,614	64·9
1913	12,263	4,068	66·8
1914	10,977	3,587	67·3
1915	7,993	2,714	66·0
1916	10,024	3,810	67·0

It will be seen that the gross earnings of the Canadian Pacific Railway by no means show a steady growth. There can be no doubt that the drop of the last three years reflects, in part at least, the effect of the new competition of the Canadian Northern and the Grand Trunk Pacific. And the Canadian Northern growth must equally be conditioned by the competition of the Canadian Pacific and the Grand Trunk. It will be seen further from the table that there is by no means a steady growth of net earnings. Nor can we, in face of the constant increase of the operating ratio through a long series of years all over the American continent, in view of the great rise in the cost of materials, especially coal and steel rails, and the insistent demands for increases of wages, think it safe to assume that the operating ratio of the Canadian Northern will show a consistently steady decline in each succeeding year.

Prospective Requirements of Canadian Northern.

The Canadian Northern estimate submitted to us further calculated that, in the course of the next five years, the company will need to spend \$12,500,000 of new capital for additions and betterments, and \$25,000,000 for new equipment. We consider these estimates entirely inadequate, and especially so in relation to the estimate of 90 per

*Gross earnings include receipts from steamships, telegraphs and other sources not properly attributable to railway mileage.

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cent increase in gross receipts. The company has acknowledged that its equipment is inadequate to take care of its existing business. That equipment stands in the company's books at \$59,000,000. If the business were to increase 90 per cent, it would seem to need not \$25,000,000 but over \$50,000,000 spent on new equipment to handle it. Again we refer to Canadian Pacific Railway figures. That company has seven freight cars per mile of line. The Canadian Northern has three. We think it will need five; and this implies an addition of 20,000 cars to the existing stock. This alone would imply, even if prices dropped to those current a year ago, an additional expenditure of something like \$30,000,000. And the same thing is true in respect of locomotives. Nor can the estimate of \$12,500,000 for additions and betterments, spread over a system of 10,000 miles during five years, be sustained, more especially in the case of a system that is only just emerging from the construction stage. It works out at \$250 per mile per annum. It is impossible that the needs of a rapidly growing property can be adequately provided for at any such figure.

We think that \$40,000,000 for equipment, and perhaps \$30,000,000 for additions and betterments, would be a moderate estimate of the system's needs in the next five years, assuming that the Canadian Northern remains separate and independent.

We sum up the Canadian Northern situation as follows: The company is not at present able, and will not for some years to come be able, to meet its fixed charges. It will, we doubt not, increase its net earnings as the years go by. But the increased net earnings will be fully absorbed for some years to come by the interest on new capital, which must be put in, if the system is to render efficient service. The company has not now, and as far as we can see will not have in the near future, such credit as to enable it to raise the necessary capital. As we have already shown, the public investment, direct and indirect, in the Canadian Northern system amounts to \$298,000,000. We do not recommend further public investment in the system, as at present constituted.

Value of Canadian Northern Undertaking.

1. CASH INVESTMENT.

The property investment of the Canadian Northern Railway system is stated in the balance sheet of June 30, 1916, at \$494,112,489.34. This figure admittedly has been written up to include \$100,000,000 of capital stock. And this stock, as we have already said, was issued without any cash consideration. We have endeavoured to ascertain the actual cost of the system. From the company's official reports and special statements supplied to us, we have ascertained that the maximum cash investment that can have been made in the property is \$383,302,451.33.

The following tables, which have been accepted by the company as accurate, show:—

- (i) The source of money or credit.
- (ii) The disposition of money or debit items.
- (iii) A list of bonds of constituent companies assumed.

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i. SOURCE OF MONEY OR CREDIT.

Cash realized from securities sold and from collateral loans (pp 205-7 record).	\$302,713,872	69
Dominion Government loans of 1914 and 1916.	15,878,166	67
Subsidies (not including subsidies of prior organizations) (Q. 4)	28,000,222	50
Land sales (Q. 4)	16,603,295	62
Sales of acquired bonds and stock (Q. 8)	618,606	45
From Equipment Trust Securities (Q. 4)	\$ 37,233,871	13
Par value Equipment Trusts issued	\$ 39,836,458	20
Now outstanding	16,862,500	00
Paid from proceeds of other securities, p. 94	\$ 22,973,958	20
Net amount from equipment trusts	14,259,912	93
Due on construction	169,666,957	26
Audited vouchers and accounts	11,161,443	88
Wages and salaries	1,832,708	23
Matured interest coupons unpaid	2,166,597	75
Accrued interest not yet payable	2,412,673	30
Accrued taxes	250,000	00
Insurance fund account	606,847	53
Railway surplus	2,776,711	03
Bonds assumed in the acquisition of constituent companies	20,215,746	03
	\$436,173,761	87

ii. DISPOSITION OF MONEY OR DEBIT ITEMS.

Cash in hand and at bank	\$ 25,414,408	50
Materials and supplies	3,368,924	82
Due from companies and individuals	7,276,429	01
Due from agents	1,446,010	67
Deferred land payments	7,140,996	59
Insurance paid in advance	682,906	11
Unadjusted debit items	246,545	00
Securities (dock, lands, and stock yard companies)	1,123,393	55
Sinking funds	248,750	66
Terminal properties and miscellaneous investments	5,922,945	63
	\$ 52,871,310	54
Total available for road and equipment	\$363,086,705	30
Bonds assumed in part payment of lines purchased (See list in table 3 following)	20,215,746	03
	383,302,451	33
	\$436,173,761	87

iii. BONDS SHOWN AS OUTSTANDING, BUT FOR WHICH NO PROCEEDS ARE REPORTED AS RECEIVED—PAYMENT ASSUMED BY CANADIAN NORTHERN RAILWAY AS PART OF PURCHASE.

Qu'A.L.L. & S. Ry. & S.B. Co., 4 per cent 1st Mtg. Debenture Stock	\$ 5,051,462	90
Less in Treasury	31,781	80
	\$ 5,019,681	10
Central Ontario Railway, 5 per cent 1st Mtg. Bonds	956,300	00
Bay of Quinte Railway, 5 per cent 1st Mtg. Bonds	330,000	00
Gt. No. Railway of Canada, 4 per cent 1st Mtg. Bonds	3,505,750	00
Quebec & Lake St. John Railway, 4 per cent Mtg. Deb. Stock	4,359,014	93
*Duluth, Rainy Lk. & W. Railway, 5 per cent 1st Mtg. Bonds	2,000,000	00
Halifax & Southwestern, 3½ per cent 1st Mtg. Bonds	4,447,000	00
*Minnesota & Manitoba Railway, 4 per cent 1st Mtg. Bonds	349,000	00
Niagara St. C. & T. Railway, 5 per cent 1st Mtg. Bonds	1,098,000	00
	\$ 22,564,746	03

*Less bonds on leased lines not included in Funded Debt—

Duluth, Rainy Lake and Winnipeg Railway	\$ 2,000,000	00
Minnesota and Manitoba Railway	349,000	00
	2,349,000	00
	\$ 20,215,746	03

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From this total maximum of \$383,302,451 we deduct the following items, which the company has included in cost of road and equipment, but which do not represent investment in property:—

1. Advances to controlled companies to pay indebtedness for interest subsequent to construction and operating deficits which were capitalized when the system was put together, not less than..	\$10,000,000
2. Interest during 1916 overcharged to construction, not less than..	3,000,000
	<hr/>
	\$13,000,000
Leaving for investment in road and equipment and in securities of constituent and subsidiary companies..	370,302,451

We find then \$370,000,000 to be the maximum possible cost of the Canadian Northern system as at present existing. In other words, as indeed is frankly admitted by Canadian Northern witnesses, the Canadian Northern shares represent no cash investment.

2. PHYSICAL BASIS.

But money cost is not all. We decided also to ascertain the approximate value, on the basis of reproduction cost, of the property as it exists to-day. And we rely on Professor Swain's valuation for this purpose. This valuation is, in his opinion, a liberal estimate of the fair cost of reproducing new, at pre-war prices of labour and material, the system at present existing. It includes property belonging to the system at its estimated cost, if it had to be acquired or constructed to-day. And therefore it not only gives the company credit for lands which it in fact owns, even though it obtained them as a grant; but it also credits the company with the increment of land values since the date of the original acquisition. And these two items are quite large.

Professor Swain's method of arriving at his results are fully explained in his report, which is printed as an appendix hereto. He makes the total cost of reproduction new, \$397,441,567. From this he deducts for depreciation \$40,031,889, making the cost of reproduction of the property in its present condition \$357,409,678. This, however, does not include equipment. The equipment was inspected by Mr. Buchanan and, on the basis of his report as to quantities and condition, a valuation has been made by Mr. W. H. Chadbourn, C.E., chief engineer of our valuation staff. He finds the cost of reproduction new at pre-war prices to be \$56,590,418, and the depreciation to be \$11,250,433, making the present value \$45,339,985. Putting the two valuations together, we have \$402,749,663 as the fair cost of reproducing the entire physical Canadian Northern system in its present condition. Now the outstanding liabilities (bonds, debentures, notes, and bank and other loans) of the company exceed \$400,000,000.

Reckoning on this basis, it appears that the liabilities are practically equal to the reproduction cost of the physical property. But the physical property does not all belong to the Canadian Northern shareholders. There are minority holdings in several

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of the subsidiary undertakings. And the Canadian Northern interest in these undertakings only corresponds to its percentage proportion of their respective share capitals. This implies a reduction of more than \$10,000,000 in the estimate of the assets belonging to the Canadian Northern shareholders.

We find then that, on the physical basis, the value of the property of the Canadian Northern shareholders is distinctly less than the amount of the liabilities against it. On this basis the equity of the shareholders must be regarded as non-existent.

3. GOING CONCERNS.

A third basis of estimate is the value of the property for sale as a going concern. A purchaser would not consider either original cost or reproduction cost as of much importance. The price he would pay would be based on earning power, present and potential. On this basis he would consider how far the Canadian Northern is at present short of covering its fixed charges, how long it will take to reach equilibrium, how much new capital will have to be spent, how soon a dividend may be expected and at what rate. Calculating on this basis, in the light of the figures set out above, it is evident that no purchaser would offer for the property a sum amounting to the total of its liabilities.

Conclusion as to Canadian Northern.

We conclude, therefore, that the shareholders of the company have no equity either on the ground of cash put in, or on the ground of physical reproduction cost, or on the ground of the saleable value of their property as a going concern. If, then, the people of Canada have already found, or assumed responsibility for, the bulk of the capital; if they must needs find what further capital is required; and if they must make up for some years to come considerable deficits in net earnings, it seems logically to follow that the people of Canada should assume control of the property. We return later to the Canadian Northern Company in order to set out our recommendations as to its ownership and management in the future and as to the terms to be offered to the existing shareholders.

PART IV.

POSSIBLE METHODS OF PUBLIC CONTROL

We recommend that the control of the three companies, Grand Trunk, Grand Trunk Pacific and the Canadian Northern be assumed by the people of Canada. We have therefore now to consider how this control should be exercised.

Government Operation Discussed and Rejected.

We are instructed to consider the acquisition of the Canadian railways by the State, and the possibility of their operation in connection with the Intercolonial.

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We do not recommend this course. In our judgment it is not in the interests of Canada that the operation of its railways should be in the hands of the Government. We know no country in the world, where a democratic State owns and operates its railways, in which politics have not injuriously affected the management of the railways and the railways have not had an injurious influence on politics. We do not think Government ownership of the Canadian railways would tend to reduction of rates, but rather in the contrary direction. For the carriage of one ton of freight one mile the Canadian shipper pays at present on the average three-fourths of one cent. On the railways of New South Wales, the oldest and most important Australian State, where the railways have been in Government hands from the outset, the shipper pays well over two cents. But we see no cause to enlarge here on such general considerations. There are several reasons peculiar to Canadian conditions why State ownership and operation should be avoided.

The Canadian Pacific Position.

We think that, if the State took over and undertook to operate the Grand Trunk, the Grand Trunk Pacific and the Canadian Northern, it would be morally bound to offer to purchase the Canadian Pacific also. This company is in a strong financial position; it has assets of great present and even greater potential value, largely exceeding its liabilities; its \$260,000,000 of common stock stand at a high premium, and have been very much higher; it pays a steady dividend of 10 per cent; its purchase would be a costly matter; and it does not ask to be purchased or to be helped in any other way. The company is admittedly progressive and gives a good public service. Moreover, it has a large investment in ocean steamships, irrigation, land and coal development schemes, and other enterprises quite unsuited for Government management. But the Canadian Pacific Railway is exposed throughout its whole territory to the competition of either one or both of the other systems. So long as that competition is in the hands of other organizations, also having to earn the interest on their bonds and striving to earn a dividend on their stocks, the Canadian Pacific Railway has no cause for complaint. But competition with railways operated by the Government stands on an entirely different footing. It would be at any time possible for the Government deliberately to adopt a policy of lowering rates, in some part or throughout the territory involved, below a commercial basis, and making up the deficiency out of general taxation. It might be argued that such a policy was justifiable on the ground that the general prosperity and development of the country would be thereby promoted. But while conceivably it might be proper to tax the public to develop the country, though in fact it would not be the whole public but only certain portions of it that would benefit, it could not possibly be fair to impose a special tax upon the Canadian Pacific Railway shareholders for the purpose. And yet it is evident that this would in fact happen. The Canadian Pacific Railway would be absolutely forced to follow any rate reduction made by the Government railways, on pain of losing the business entirely.

Further Reasons against Government Operation.

Another strong argument against Government operation is to be found in the fact that the three great Canadian companies amongst them either own, lease, or control no less than 7,000 miles of railway situated in the United States. And some at least of these lines are necessary economic complements of the Canadian systems. It is clearly impossible that the Dominion Government should be subjected, not only to the regulating authority of the Interstate Commerce Commission and the several State Railway Commissions of the United States, but also to the police regulations of all the States which these lines enter. Technically, no doubt the difficulty could be got over by investing the legal ownership in Government officials under their own names as trustees for the Government. But the practical fact would remain. It would in effect be the Canadian Government which would be ordered by the United States Interstate and State Commissions to alter its rates, and Canadian Government officials who would be required by United States law courts to explain their actions and justify their conduct. We cannot think that such a situation would conduce to international harmony.

A yet more important consideration remains. Canada is at war, and Canadian resources are deeply pledged for war purposes. If the Government takes over the railways, not only does it assume the direct responsibility for the whole existing debt; but all the new money that has to be raised (and as will be shown in a later portion of this report, the amount of this new money must necessarily be considerable within the next few years) will become a direct obligation of the Canadian Government. It is a matter of common knowledge that railway bonds and Government loans appeal to different classes. And we are persuaded that it is desirable that Canada should retain both strings to her bow.

For all these reasons our recommendation is that the idea of Government ownership and operation be not entertained.

Receivership Discussed and Rejected.

Starting then from this position, we have to consider what alternative course is to be adopted. It is clear that neither the Canadian Northern nor the Grand Trunk can at the present moment meet its liabilities. In the United States when a company is in this position it is placed in the hands of a receiver. And at this moment upwards of 40,000 miles of line are in that situation. Under a receivership the holders of the junior securities have to submit to compound their claim, and the fixed charges are reduced to an amount that the net revenue from operation suffices to meet. Ought this drastic course to be adopted here? We think not. We think the security holders of the companies have to some extent a moral claim on the Government. Their schemes of extension have been matters of public knowledge for many years. So far from discouraging them, the Governments, both of the Dominion and of the Provinces, have by subsidy and by guarantee, by loans and cash advances, encouraged them to go on.

But there is more than this. The bonds and debentures of the Grand Trunk Pacific and Canadian Northern have been placed in the main through London with non-

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Canadian holders. And these holders in subscribing have unquestionably been influenced by the fact that the companies were backed by the Canadian Government. Technically, of course, the Government has no responsibility beyond that of meeting its own guarantees. But if the two companies went into the hands of receivers, we cannot doubt that investors outside Canada would believe, however erroneously, that the Dominion Government had treated them badly, and that the result would be serious injury to the credit of the Canadian Government, and indeed of all Canadian enterprises. And this result is one that, putting it on pecuniary grounds alone, the Canadian people should in their own interest spend a good deal of money to avoid. We therefore consider that Canada should assume the responsibility of seeing that the interest on these securities is met.

This responsibility is in our opinion unavoidable. But we recognize that it is serious. It will involve considerable financial aid for some years. How many we will not estimate, as it depends in the main on the rate at which Canada develops. And that rate no one can venture to foretell. We ought to point out, however, that the rate at which the Canadian Pacific progressed, when it was the only transcontinental line, cannot reasonably be taken as a standard of the probable rate of progress of two new transcontinental systems, competing, not only with each other, but with the rich and firmly established Canadian Pacific itself.

Transfer to a New Body Recommended.

We have recommended then that the control of the three companies, Canadian Northern, Grand Trunk, and Grand Trunk Pacific pass into other hands; that the rights of the creditors of all three companies be preserved intact; but that the railways of the three companies be not handed over to, or operated by, the Government. It is necessary, therefore, to find some new body or bodies to whom they can be transferred. We think the question, whether there should be one body or more, is answered by the facts that we have already recited. The Canadian Northern is weak in the East. The Grand Trunk, with the inadequate Prairie branches of the Grand Trunk Pacific, would be almost powerless to compete in the West with the Canadian Northern and the Canadian Pacific. The natural tendency of the Grand Trunk and Canadian Northern organizations, if left separate, would be for each to invade the territory of the other. Remaining separate, the Canadian Northern system would need to spend many millions of dollars to obtain an adequate hold on the East in competition with the Canadian Pacific and Grand Trunk. Remaining separate, the Grand Trunk and Grand Trunk Pacific system would need to spend many millions of dollars on new branches in the West, in order to hold its own with the Canadian Pacific and the Canadian Northern. And this money would be needed at once, for till it was spent neither organization would possess a complete system. Canada cannot afford all these new railways, and does not need three competitive systems. We recommend therefore that the three undertakings, the Canadian Northern, the Grand Trunk, and the Grand Trunk Pacific be united in one system. To whom then should its management be entrusted?

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Suggested Transfer of all the Railways to Canadian Pacific Discussed.

One possible solution which has been submitted to us we will deal with at the outset. For, though we are unable to recommend its adoption, it has very influential support. This suggestion takes two forms. The one is that the Canadian Pacific Company should, by lease or purchase, obtain control of the other roads and operate the whole Canadian railway system as partner with the Government, on terms to be arranged. The other is that the Government should itself acquire all the roads, including the Canadian Pacific Railway, and employ the organization of that company as a basis on which to build up the organization of the greater system. The first alternative is specially supported from the financial side. And indeed, were financial considerations controlling in this matter, we do not deny that a very strong case could be made for it. The second alternative commends itself more especially to those who feel that the Government is already involved so deeply in railway enterprise that it cannot call a halt, and must go the whole length. We are not prepared to agree with either party. We do not think that a railway monopoly is desirable, either in the hands of a company, or in the hands of the State. We are convinced that the people of Canada who have spent or guaranteed—whether wisely or not, is not now the question—hundreds of millions of dollars, largely with the object of breaking a private monopoly, would never consent to the re-establishment of a still greater monopoly, even if the Government were a partner in the concern. We do not think that there is any necessity for the State to go further than it has already gone in the direction of Government operation. We recognize that the Government occupies in respect of the Canadian Northern and Grand Trunk Pacific roads, very much the position of a mortgagee whose mortgagor is in default. But we do not think that the Government, as a Government, need enter into possession. We think a scheme may be worked out whereby Canada will have two great systems, both with substantially similar management, operating alongside in healthy rivalry from ocean to ocean.

Suggested Transfer of the Whole or a Portion of Canadian Northern to Canadian Pacific Discussed.

Another suggestion has been made which we will deal with here. In our judgment it has even less to recommend it. It is suggested that the lines of the Canadian Northern should be handed over to the Canadian Pacific Railway, on terms to be arranged. We can see no possible advantage to the country in this proposal. It would hand over the lines with the best prospect of development to the Canadian Pacific Railway. It would re-establish what would be a practical monopoly in the Prairie Provinces. It would leave the country to carry the burden, for an indefinite time to come, of the Grand Trunk Pacific, which in its present isolated position has little hope of prosperous development. And it would lead before long to an inevitable result. For the sake both of giving the Grand Trunk Pacific system a fair chance to develop, and in order to break down once more the re-established monopoly of the Canadian Pacific Railway, pressure would be put on the Government to obtain a wholesale extension of the Grand

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Trunk Pacific branch lines, for which there is no commercial justification. Capital would be wasted, operating expenses would be duplicated, and the ultimate solvency of the publicly owned lines would be indefinitely postponed.

For the suggestion which has also been made, that the Canadian Pacific Railway be invited to take over the western portion of the Canadian Northern only, there is in our judgment still less, if that be possible, to be said than for the suggestion that the Canadian Pacific Railway take over the whole. It has all the disadvantages of the former proposal. And it has this further disadvantage. The eastern lines of the Canadian Northern have not any very hopeful outlook even under present conditions. If they cease to be the complement of the Canadian Northern prairie lines, they have no justification for existence whatever. And yet it is proposed to leave the country to carry the burden of them.

Possibility of Forming a Commercial Company Discussed.

Assuming, then, that the Canadian Northern, Grand Trunk, and Grand Trunk Pacific must be united into one system, and that this system must remain entirely separate from the Canadian Pacific Railway, we have considered the possibility of forming a new company on a commercial basis, to which the operation of these three undertakings might be transferred. We have come to the conclusion that this course is not feasible under the circumstances, as they at present exist.

THE MEXICAN PRECEDENT.

We have considered what is commonly known as the Mexican scheme. Under this scheme, which was originated by Señor Limantour, the very able Finance Minister of the Diaz Government, the Government, in return for the guarantee of certain bonds and the payment of a nominal amount of cash, acquired possession of a sufficient amount of deferred ordinary stock of the principal railway companies, on which no dividend was likely to be earned in the immediate future, to give them control of the election of the Boards of Directors, and therefore indirectly control of the policy of the companies. Similar partnerships between the public authorities and private companies have in recent years become common in the great German cities for the establishment and operation of gas, electric, and street railway undertakings. The Mexican scheme is understood to have worked very successfully, so long as Mexico remained an organized community. We do not think it applicable to Canada, where the conditions are entirely different. In Mexico the bulk of the money had been raised by the companies on their own responsibility; there was no question of defaulting on fixed charges; the systems were practically complete; and no large amounts of new capital were required. In Canada the bulk of the money has been raised on the responsibility of the Government; the companies cannot meet their fixed charges; the systems are far from complete; and much new capital will have to be provided, which can not be raised by the companies on their own credit. We cannot therefore recommend that the Mexican precedent be followed.

THE NEW YORK SUBWAY PRECEDENT.

There is a precedent in the New York Subways for a scheme under which the railway is constructed and owned by the public authority, and its operation is entrusted to a company, which finds capital to an amount representing the value of the equipment, and takes a lease for a period of years, upon terms that the company receives a return of five or six per cent, as a first charge on the profits, while profits beyond that figure are divided in agreed proportions between the company and the public authority. The New York partnership scheme, however, has reference to an undertaking with every prospect of making a substantial return on the capital involved from the outset. There is no such prospect here. We have to contemplate a condition of affairs in which, for a good many years to come, the operation will not yield a commercial return on the capital already invested. A promise of the whole return, therefore, would not tempt the outside capitalist; still less would the offer of a portion of it. To induce outside capital to come in and share the risk, it would be necessary for the Government to guarantee a return upon it of not less than $4\frac{1}{2}$ per cent or 5 per cent forthwith, and to offer a prospect of partnership in the valuable reversion later on. And seeing that, with the guarantee of the Government of Canada behind it, all the money requisite could be borrowed at 5 per cent without any reversion, the offer of a reversion would be, in effect, to deprive the people of Canada of a portion of the return when they have earned the right to receive the whole.

Further, we have no reason to think that such an offer, even if made, would attract the necessary capital. The speculative investor likes to see his profit in the near future. In this case he would have to wait a good many years before he could expect any return on his money beyond his fixed $4\frac{1}{2}$ or 5 per cent. Under present market conditions, an investor, prepared to take some risk, can do much better for himself than this.

Canadian Railways should be under Canadian Control.

There is yet another reason why we do not think that, even if it were possible, any attempt should be made to form a new company, either on the Mexican or on the New York Subway model. Such a company could not be Canadian. The capital would have to be found elsewhere. And the control would follow the capital. We think Canadian railways should be under Canadian management.

. PART V.

THE DOMINION RAILWAY COMPANY.

Government Operation not Recommended.

Having then arrived at the conclusion that the transfer of the three undertakings to a commercial company is not feasible, we recommend that they be handed over to a board of trustees to control and manage on behalf of, and on account of, the people of Canada. The trustees should be organized as a company with a nominal capital. But in effect they would be a public authority.

Before going further we desire to make a fundamental point clear. We express the conclusion to which we have come both in negative and positive forms. We recommend:—

1. That the Government do not acquire or undertake to operate any further railways; but:

2. That these three railways, Canadian Northern, Grand Trunk, and Grand Trunk Pacific, be transferred by Act of Parliament to an independent Board of Trustees (incorporated as a company), constituted as we shall hereafter describe.

These recommendations, from our point of view, hang together and must be regarded as inseparable. We do not recommend the transfer of the three companies at all, unless our recommendations as to the method to be followed are also substantially accepted. That the Government should itself take over the railways, and they should then be operated under the control of a Parliamentary Minister of Railways, is a policy which in our judgment would not be in the best interest of Canada.

Our personal belief is strong that, in normal circumstances, railway enterprise is a matter best left in private hands, subject to proper regulation by the Government. Were we asked to advise in the case of the railways of the United Kingdom or the United States, which have been constructed by private companies, with money found by private investors, we should give effect to this belief. We go further and consider that, in the case of the Canadian Pacific Railway, as to which the Government does instruct us to advise, the fact that it received large help from public sources in its early days, is not any reason why the existing status of the company should now be disturbed. This company has carried out its bargain. It has repaid to the Government large advances made in earlier years. We believe that Canada has had good value for what it has given. We think that it is in the interest of the country that this company should be rich and prosperous, for such companies can be expected, not only to give the best service, but to be best able to provide in time to meet new developments as they arise. We have had no hesitation, therefore, in coming to the conclusion that the status of the Canadian Pacific Railway should be left undisturbed.

But in the case of the Canadian Northern, the Grand Trunk and the Grand Trunk Pacific the circumstances are not normal. These companies have broken down. We

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see no way to organize new companies to take their place. Their only possible successor is in our view a public authority. We are confronted with a condition and not a theory.

Recommendation of Independent Board of Trustees.

Our formal recommendations are:—

I. That a Board of Trustees be constituted by Act of Parliament and incorporated as “The Dominion Railway Company.”

II. That the ownership of the Canadian Northern, Grand Trunk, and Grand Trunk Pacific Railways be vested in this Company.

III. That the Government assume responsibility to the Company for the interest on the existing securities of these undertakings.

IV. That the Intercolonial (including the Prince Edward Island) and National Transcontinental Railways be also handed over by the Government to the Company.

V. That the whole of these railways, the Canadian Northern, the Grand Trunk, the Grand Trunk Pacific, the Intercolonial, and the National Transcontinental, be operated by the Company as one united system.

Constitution of Board, and Tenure of Office.

We now proceed to set out these recommendations in more detail.

The Trustees should be five in number. The first Trustees should be named in the Act of Parliament constituting the Board.

The tenure of office should be the same as that of judges of the Supreme Court, with the exceptions hereafter noted. Three Trustees, one of whom should be the chairman, should, if possible, be men of railway experience. They should be required to give their whole time to their duties, and salaries should be fixed adequate to command the services of the best men. Of the two remaining Trustees, we think it would be desirable that one should be selected on the ground of business and financial experience, and the other as specially possessing the confidence of railway employees. They should not be expected to give their whole time. Their maximum salary might be laid down in the Act, to be adjusted later when the requirements of the position became evident. Every Trustee on appointment should be required to divest himself of all interest in Canadian railway bonds or stock, and should further satisfy the appointing authority that he has no other interest that conflicts with his duties as Trustee.

All appointments other than those of the original Trustees should be for a fixed period of seven years, except that in the case of a casual vacancy, owing to death or disability or resignation, the appointee should hold office only for the remainder of the term for which the Trustee whom he replaces was appointed.

Every Trustee should be eligible for renomination and reappointment.

Vacancies should be filled, in the case of a railway member, by appointment by the Governor General in Council, on the nomination of a majority of the remaining

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Trustees; and in the case of other members, by appointment from a list of three names, similarly nominated. Should the Government refuse to approve a nomination, it should devolve upon the Trustees to submit a new name.

The original Trustees should vacate their positions according to the following scheme: The three railway Trustees should retire after three, five, and seven years, respectively; the order of retirement amongst the three being determined at the date of the Trustees' assumption of office. The two remaining Trustees should retire after four and six years, respectively; their relative position between themselves being similarly determined.

Every Trustee should retire on attaining the age of seventy years.

Board to be Non-political.

We desire to call attention to the extreme importance that the Board should not assume, or even be suspected of assuming, a political complexion. In the United States an attempt has been made to guard against this danger by statutory provision that not more than four out of the seven members of the Interstate Commerce Commission shall belong to the same political party. We do not recommend that this precedent be followed, as we think politics have nothing to do with the matter; and any such restriction might hamper the Government in their choice of best men. But should it be desirable in the public interest to select Trustees of recognized political affiliations, we think it most important that the spirit of the United States legislation should be borne in mind, both by the Government in making the original selections, and by the Trustees themselves in recommending names to fill any subsequent vacancies.

Board to be Permanent and Self-perpetuating—Australian Experience.

We recommend that, subject to the power of the Government to refuse to confirm a nomination, the Board of Trustees should be a permanent self-perpetuating body, and we attach very great importance to this point. The four older States of Australia, New South Wales, Victoria, South Australia, and Queensland have had a long experience of public ownership. In each State the history has been very similar. Originally, the railways were managed under the direct control of a Minister of Railways, responsible to Parliament. In each State, the system was found unsatisfactory. In each State, commissions were appointed, with functions substantially similar to those which we are recommending to be conferred upon the board of trustees. In each State, the result was improvement. But the Australian commissioners were only appointed for five year terms. And the lack of permanence in the commissioner's tenure of office prevented a permanent success. The first years of the commission's term were usually the most successful, for then the commissioners had the freest hand to manage their undertaking on commercial lines. Some of the States have gone through a checkered history. The commission has been abolished; and the management has been transferred back to a political minister. Once more the result has been unsatisfactory; and a new commission has been appointed, only, in turn, to fail of success. The main

cause, as we read the story, has been the lack of permanence of the commission and the short tenure of office of the individual commissioners. We, therefore, think it essential that the Board of Trustees shall be permanent, non-political and, subject to Government approval of each new nomination, self-perpetuating.

Railways not a Proper Subject for Direct Parliamentary Control.

We have given expression to a strong view that the operation of the railways of the country by a department of the Executive Government directly responsible to Parliament would be against the interest of Canada. Lest it should appear that this view implies a reflection on the honesty and ability of ministers and members of Parliament, we desire to explain why we entertain it. Our reason is, not that Government by a Cabinet responsible to a popularly elected Parliament is a bad Government for the ordinary purposes of Government, but that it is not a form of Government suitable for the management of a railway undertaking.

In primitive times all Government was concentrated in a single hand. The king or chief was at once the law-giver, the administrator and the judge. The king as law-giver prescribed duties and established rights; as judge he decided on the interpretation of those rights and duties between the nation, represented by himself, and the individual; and finally as executive authority he enforced his own judicial decisions with respect to the rights which he had himself established as legislator. Centuries ago the progressive nations of Western Europe had outgrown this primitive idea. They had learnt to differentiate functions to the extent of making the judge entirely independent both of the legislature and of the executive government. Even under the absolute despotism of Frederick the Great of Prussia a judge could decide a quarrel between the King and a humble subject in favour of the subject. To say now-a-days that the administration of justice is not a matter to be left to a minister responsible to Parliament, would be to say a thing so obvious as to seem a preposterous truism.

Growth of Extra-Parliamentary Functions of the State.

But the process has gone further. We are learning that there are other matters which it is well to withdraw from the political arena. It has become a commonplace in England within the last generation to say that foreign policy has been "withdrawn from the sphere of party politics." The same thing had in great measure happened before the war in the case of naval administration; it was more and more becoming the rule in the case of army administration also. In other words, in respect of these three vitally important spheres of national activity, though the form of direct parliamentary control was retained, it had come to be recognized, that the affairs were very complicated, that the reasons for action might be good without being such as could publicly be avowed, and that therefore they were best left to experts, carefully selected and then given a mainly free hand. Since the war, public opinion on this question has ripened fast. England and France are countries just as democratically governed as Canada. And in England and France, the fact

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that prompt and decisive executive action is inconsistent with detailed Parliamentary control, is being more and more recognized, not only by the public but by Parliament itself. Numerous boards of experts, with an almost entirely free hand, have been set up in England to take charge of different branches of public activity. It cannot be supposed that the lesson learnt in war will be wholly unlearned when peace returns. It is hardly likely that countries whose constitutions are based on the English model will go as far as the United States, where the Executive and the Legislature are almost entirely independent of each other, where the House of Representatives has no direct control of the Executive Government at all, and where even the Senate can only confirm or refuse to confirm certain appointments, but has no power to secure either the nomination or the dismissal of a single official. But there can be no doubt things are moving in that direction. It is because we think that the management of a railway undertaking, like the control of shipping or of enemy trade, or the work of the Imperial Munitions Board, is a matter that in the public interest is best left to experts, that we desire to avoid direct Parliamentary control.

In this connection it seems desirable to point out that the Prussian railways, certainly the most successful State-operated railways in the world, are not subject to Parliamentary control. The Prussian Parliament has not much control over any department of the Government, but over the railways, owing to the fact that, so far from requiring votes of money, they yearly contribute a considerable net revenue for general State purposes, it has even less control than over other departments. The only check on the action of the Minister of Railways is that afforded by the Railways Councils, to which we refer hereafter, and whose powers are merely advisory and in no way compulsory. In Canada we are recommending, not only that similar Railway Councils should be established, but that the Trustees should also be subject to the orders of the Railway Commission, a body to which Prussia furnishes no analogy.

Private Interests and Public Interest.

The railway touches the life of the country at innumerable points. It can almost make one city and unmake another. It vitally affects the question whether an industry in one place is more or less profitable than in another. Every city wants to become a railway centre, to have railway works located within its limits. And the local member invariably wants it too. Every citizen wants the railway station placed where it best suits his own personal convenience, and wants that every express train shall stop at it. He naturally strives to secure these benefits for himself, and his local member naturally desires to help him in their attainment. The individual citizen, the local member, cannot be expected to see the railway situation as a whole; to appreciate, for instance, that an express which stops at every man's local station ceases to be an express at all. Even if he does appreciate it—human nature being what it is—he will probably be quite content if, by bringing political pressure to bear, he can gain an advantage in which his neighbour at the next station does not participate. It is too much to expect of the average merchant, the average manufacturer, that if he finds that by pressure he can obtain for himself an exceptionally low rate, he will refrain from asking for it, because it gives

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him an unjustifiable advantage over a rival, or because he knows that the balance of net revenue must be made up by unreasonably higher rates paid by other people's traffic.

It is only when the management is protected from the pressure of special interests that a railway can be managed in the interest of the public as a whole, that it can be expected that improvements and alterations will be made, even though they injuriously affect certain individuals, because they are justified by greater benefits to the people at large. To take one example. We are satisfied that there are many cases where in the interest of economy, duplicate services should be abolished, and duplicate stations closed. Any such change must injure somebody. Supposing that it results in a saving of \$1,000 a year to the taxpayer, while the injury can be measured by a loss of \$25 a head to three or four people, clearly the change ought to be made. But if the three or four men can get their grievances voiced in Parliament, while the taxpayer is an abstract entity with no one to speak for him, probably the change will never be made. There is no need to multiply instances. We believe that the history of railways all over the world, where the management is directly under a minister responsible to a democratic Parliament, confirms our position that under such a system the public suffer because special interests obtain concessions at the expense of the community as a whole. It is for this reason that we have emphasized our recommendation that the management of the railways be entrusted to a body independent of politics.

Control of Dominion Railway by Railway Commission.

At the same time we recognize that the non-political body, which we propose to establish, will neither be infallible nor impeccable. We therefore propose to give to the Board of Railway Commissioners the same full judicial authority over all its actions and refusals to act which the Board at present has over the private railway companies. With a board of management appointed on the sole ground of competence, controlled by a commission with power of impartial review, we believe the rights of every citizen to receive fair and equal treatment—and no citizen ought to desire to receive more—will be amply protected. And at the same time the dangers of political influence will be avoided.

Relation between Trustees and their Employees.

It has been a common experience in all democratic countries that, where undertakings are in the hands of public authorities, either national or local, the employees are tempted to use political methods to improve their personal position. We think it important that the Trustees should be protected against pressure of this kind, which would be entirely without justification, if our proposal, that one of the Trustees shall be specially charged to watch over the interest of the employees, is adopted. To obviate the evil, it has often been proposed that employees of the Government shall be deprived of their national vote and employees of a municipality be deprived of their municipal vote. We cannot accept this idea. A State servant does not cease to be a citizen, and he has as good a right to exercise his vote as his neighbour, provided he does not use it to obtain for himself an unfair advantage at

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his neighbours' expense. In this matter the Australian experience is of interest. In the State of Victoria there was in 1903 a fierce strike on the State railways. The men by their conduct alienated all public sympathy and were badly beaten. The Victorian Parliament thereupon passed an Act, not indeed disfranchising the railway employees altogether, but depriving them of their votes in their own local constituency; placing them on a separate register, and giving them power to elect, as their special representatives, one member to the Council and two to the Assembly. In 1906 this Act was repealed and superseded by "An Act to abolish separate representation in Parliament of Public Officers and Railway Officers." Section 4, of this Act, which is still in force, is as follows:—

(1) "In order that all officers may be enabled to render loyal and efficient service to the State, it is hereby enacted that no person or class of persons employed in any capacity (whether permanently or temporarily) in the Public Service (including the Railway Service, the Police Force, the State Rivers and Water Supply Department, and the Lunacy Department) shall either directly or indirectly take any part whatsoever in or in relation to election of members to the Legislative Council or the Legislative Assembly, or directly or indirectly in any way take part in the political affairs of the State of Victoria, otherwise than by recording a vote at a Parliamentary election; and no person or class of persons so employed shall directly or indirectly use or attempt to use any influence in respect to any matter affecting the remuneration or position in the Public Service of either himself or any other person.

(2) "If any person so employed is guilty of any contravention of this section, then on proof thereof to the satisfaction of the Public Service Commissioner, the Commissioner of Railways, the Chief Commissioner of Police, or the State Commissioners and Water Supply Commissioners, or the Inspector General of the Insane (as the case may be) such person may by the said authority be fined any sum not exceeding £10 and may be reduced in class, subdivision, grade or status, and salary, or he may be dismissed or his services may be dispensed with, provided that such person shall not be dismissed or have his services dispensed with for any contravention of this section without the consent of the Governor in Council."

We should hope that the employees on the Trustees' railways will be content to make any necessary representations as to remuneration or conditions of service through the member of the Board specially charged to watch over their interests, and will not attempt to exercise political influence. But should this hope ever be disappointed, we feel confident that public opinion would fully support any Government which introduced and passed a law based on the Victorian precedent.

Incorporation of the Dominion Railway Company.

The Board of Trustees should be incorporated, either directly by Act of Parliament, or by Royal Charter under the authority of the Act, as the Dominion Railway Company with a nominal capital. We assume a capital of \$50,000, divided into 500 shares of \$100 each. Each trustee would hold 100 shares. These shares would be entered in the register as held in the joint names of each particular Trustee and the Minister of Finance for the time being. The Trustee, being named first, would

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be entitled to the vote; but he could not transfer his shares without the signature of the Finance Minister. The charter would provide that no share could be transferred except to a duly appointed Trustee, and that the shares were held in trust for the Dominion.

Transfer of Stocks to Trustees.

In order to give to the Board of Trustees control of the railways mentioned, the following stocks should be transferred to them:—

1. *Canadian Northern*.—The \$40,000,000 common stock vested in the Canadian Government should be assigned by the Government to the Trustees, and also (subject to what we report below as to compensation for existing equities) the \$60,000,000 still remaining in the hands of private persons.

2. *Grand Trunk Pacific*.—The whole of the common stock should be transferred without payment, except that the actual cash paid for the shares other than those held by the Grand Trunk Company should be refunded.

3. *Grand Trunk Company*.—The whole of the stock, guaranteed, first, second and third preference, and ordinary, should be transferred. We deal later with the question of the claims of the existing holders.

Transfer of Railways to Trustees.

Intercolonial and National Transcontinental.—We recommend that these railways be handed over by the Government to the Trustees. There would be no securities to be transferred, and no money to be paid. The authority of Parliament for the transfer would suffice. We give at a later stage our reasons for this recommendation.

THE CANADIAN NORTHERN SHAREHOLDERS.

We return to the question what, having regard to all the circumstances of a very difficult case, is fair as between the Government and the Canadian Northern shareholders. One point must be dealt with at the outset. Assertions and insinuations have been widely made that public money received by the firm of Mackenzie and Mann have been appropriated by Sir William Mackenzie and Sir Donald Mann to their own use. And these gentlemen are understood to be the holders of the bulk of the Canadian Northern stock. If this charge were true it is evident that they would have no equitable claims.

Charges of Misappropriation Unfounded.

We are satisfied that the charge is unfounded. During our inquiry at Toronto on February 26 and 27, we inquired fully into the matter, and examined on oath Mr. Hanna, Vice-President, and Mr. A. J. Mitchell, Comptroller, of the Canadian

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Northern system. Both these gentlemen are intimately acquainted with its complicated finances. They gave their evidence fairly and frankly, and in our judgment with an honest desire to make full disclosure on every point on which we sought information. They called our attention to the report of the Government Auditors made to the Solicitor General of Canada on April 22, 1914, which is printed in the Sessional Papers of that year (Nos. 269*b*, *i*, *j*, *l*, *m*). The relevant passage is as follows:—

“We, would particularly draw attention to statement No. 2, being a declaration from the Comptroller of the Contractors, Messrs. Mackenzie, Mann and Company, Limited, that the contractors have made no profit on their work for the Canadian Northern Railway, other than certain fully paid common stock which is set out in a statement in our previous report. This declaration is borne out to our satisfaction, from our investigation of the books of said contractors, and also of those of the company.”

The *viva voce* evidence which we reproduce amplifies and entirely confirms the report of the Government auditors.

“MR. MITCHELL: In addition to that, Sir Henry, in connection with construction, there are no contractor's commissions on any of the actual construction. The work was turned in to the railway company at cost.

“For instance, there is actual construction representing something like \$204,000,000, in which there is no percentage whatever to the contractors. It was turned in at actual cost.

“SIR HENRY DRAYTON: How would that be done, what machinery would apply to that work? How did you do it?

“MR. MITCHELL: The work was done by the contractors, Messrs. Mackenzie, Mann and Company, Limited, and it was billed to the company at actual expenditure. The vouchers were all turned in.

“SIR HENRY DRAYTON: Was there no allowance for the Force Work Account?

“MR. MITCHELL: Actual expenditure only, as far as Mackenzie, Mann and Company, Limited, were concerned. They were reimbursed for what they had paid out on pay-rolls.

“SIR HENRY DRAYTON: Generally those pay-rolls and that sort of thing cover the usual and proper charges. You were doing it, in effect, under “force” work?

“MR. MITCHELL: Yes, sir, but instead of getting a 10 per cent commission they got the stock of the Canadian Northern Railway. That was the payment the contractors received instead of a cash consideration.

“SIR HENRY DRAYTON: The contractors themselves, some of them at any rate, would be acting as superintendents in charge of the work, carrying it on, besides which there would be all the overhead expenses?

“MR. MITCHELL: Yes.

“SIR HENRY DRAYTON: Those expenditures would be included?

“MR. MITCHELL: For instance, the Canadian Pacific Railway, we will say lets a contract to Foley and Company to do certain work. They in turn let the work to some one else, who in turn will probably let it to station men. Foley

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and Company would get their commission. On a large contract they would perhaps work on a 5 per cent or an 8 per cent basis.

"In place of that 5 per cent or 8 per cent basis which the Canadian Pacific Railway would pay to Foley and Company in cash, the Canadian Northern paid Mackenzie, Mann and Company, Limited, in stock.

"Sir HENRY DRAYTON: You say there was no allowance at all for superintendence and that sort of thing in these accounts, which is generally covered by the 5 per cent or 8 per cent?

"Mr. MITCHELL: Not any for the main contractors; there was nothing allowed for them.

"Sir HENRY DRAYTON: Sir Donald Mann gave a great deal of his own time. Do you mean to say he was not paid for that?

"Mr. MITCHELL: That was all gone into by the Government in 1914, Sir Henry.

"Sir HENRY DRAYTON: We have it in connection with that large item of \$200,000,000—or that sum is near enough. Your idea is that all that large item (it is a large sum, of course) so far as the \$200,000,000 for the construction of the road is concerned, as a matter of fact no profits were obtained by the main contractors, Messrs. Mackenzie and Mann Company, Limited, and that the only profits taken out were the profits of the sub-contractors?

"Mr. MITCHELL: That is it.

"Sir HENRY DRAYTON: Who were the sub-contractors?

"Mr. MITCHELL: There were many of them, I guess all the big contractors in Canada and the United States.

"Sir HENRY DRAYTON: Your own affiliated interests, were they sub-contractors?

"Mr. MITCHELL: No, sir, not as far as I know.

"Commissioner ACWORTH: You say this was all gone into by the Government. I am a stranger to it, of course. Was it a preliminary inquiry?

"Mr. MITCHELL: Yes, sir.

"Sir HENRY DRAYTON: In connection with loans in 1914.

"Commissioner ACWORTH: But was this question of the contractors gone into?

"Mr. MITCHELL: The Government appointed three auditors, who came to Toronto and went through the books of the Canadian Northern from the beginning. Those auditors made a full report to the Government, which is covered by the contents of the Government blue-book.

* * * * *

"Sir HENRY DRAYTON: To complete the evidence in connection with the construction of lines, there is one question I should ask you. The Canadian Northern itself is a constructing company practically, is it not?

"Mr. HANNA: Yes. We are doing all our construction work.

"Sir HENRY DRAYTON: Most of the construction is being done through Messrs. Mackenzie, Mann and Company, Limited, on the basis Mr. Mitchell spoke of?

"Mr. HANNA: Yes.

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"Sir HENRY DRAYTON: Most of the activities of the officers would be concerned, outside of purely operating branches, with construction work?

"Mr. HANNA: We had other officers, whose main duties were to attend to construction only.

"Sir HENRY DRAYTON: I suppose Sir Donald Mann, the Vice-President, was in charge of construction?

"Mr. HANNA: He charges himself with that work.

"Sir HENRY DRAYTON: Sir William Mackenzie himself did a great deal of it too?

"Mr. HANNA: He did, and did the financing.

"Sir HENRY DRAYTON: While they may not have taken profits as contractors, didn't the company properly remunerate them for their services?

"Mr. HANNA: Not to the extent of one dollar.

"Sir HENRY DRAYTON: So that they worked without salary?

"Mr. HANNA: Absolutely so.

"Sir HENRY DRAYTON: That is a case of being too modest, because it is not business.

"Mr. HANNA: That has been the experience of those two gentlemen. Neither one of them was ever on a Canadian Northern Voucher List to the extent of a dollar.

"Sir HENRY DRAYTON: Nor of any of their subsidiaries?

"Mr. HANNA: Not one.

"Sir HENRY DRAYTON: So that while they were working on construction work, neither the company nor anybody else paid them any profits at all.

"Mr. HANNA: That is right."

The result of our inquiries leads us to the conviction that both Sir William Mackenzie and Sir Donald Mann had a firm belief in the ultimate success of their undertaking, and in their own ability to carry it to a successful conclusion.

It was therefore obviously in their interest, as owners of all the common stock, that the road should be as well located and as economically constructed as possible. And they did their utmost to attain this end. The success of their endeavours may be judged from the fact that Canadian Northern construction from Tollerton (120 miles west of Edmonton) to Vancouver cost \$88,629 per mile, while the construction of the Grand Trunk Pacific from Wolf Creek (on the opposite side of the Athabaska river from Tollerton) to Prince Rupert cost \$112,000 per mile. It is true that the Canadian Northern had the benefit of the "tote" roads built by the Grand Trunk Pacific between Pembina river and Resplendent, as the Grand Trunk Pacific was first in the field; but as against that it had to face higher costs of labour and material. We believe that, speaking generally, one consideration may be set off against the other. Again, the cost of construction of the Canadian Northern from Port Arthur east to Montreal can be compared fairly to the cost of the construction of the National Transcontinental from Winnipeg to Quebec. The cost of the Canadian Northern was \$52,602 per mile, including in this amount interest at 5 per cent during the construction period, but excluding the Montreal passenger terminal. The cost of the National Transcontinental was \$93,735 per mile, including interest at 3 per cent down to December 31, 1914, but excluding the cost of the Quebec bridge.

Canadian Northern Successes and Failures.

The mistakes that have been made by the proprietors of the Canadian Northern lie in unnecessary duplication of lines and in reaching out into territories offering but a poor traffic return, rather than in errors or extravagances in actual construction.

Our conclusion of the whole matter is that the moneys required for Canadian Northern construction have been raised with considerable financial skill at very moderate rates of interest, that the construction has been economical, but that the completion of the system as a separate system would involve a very large capital expenditure on branch lines and terminals in eastern territory, and a large duplication of existing facilities; that it is impossible for the company, unaided, to complete its venture; and that it is absolutely vital to the interest of the country that further duplication should cease.

Under these circumstances, have the Canadian Northern shareholders any claim to compensation? Not, we think, as of right. But Governments in the past have not taken a stand on strictly legal grounds in their dealings with other companies. There are grounds on which similar action could be justified in this case. The company has done much to develop the Prairie Provinces. Its lines there are well located, economically constructed, and valuable for public service. Of the later constructed lines also we can say that they have been well located from the engineering, if not from the traffic standpoint, and economically constructed. And if in recent years the Canadian Northern shareholders were carried away by a wave of unreasoning optimism, at least it may be said for them that almost the whole population of Canada shared their expectations. We think that, on the whole, the equity of the case would be met, if the Canadian Northern shareholders were permitted to retain a moderate portion of the \$60,000,000 of shares which they now hold.

Arbitration Recommended.

But under the scheme we propose, the Trustees will operate the Canadian Northern lines as part of a combined system. It will be impossible, therefore, for the Canadian Northern Company, as such, ever to earn a dividend on its separate stock. We suggest that, if it is decided to permit the present shareholders to retain a portion of their holding, the Act of Parliament constituting the Board of Trustees shall contain a provision for arbitration between the Trustees and the Canadian Northern Company and establishing an arbitration board to act forthwith. The Trustees should appoint one arbitrator and the Canadian Northern shareholders the other, and the two arbitrators should agree on the appointment of an umpire; failing agreement, an umpire should be appointed by the Chief Justice of the Exchequer Court; and the decision of the board should be final.

The arbitrators should be empowered to decide two questions:—

(1) What proportion of the Canadian Northern common stock may fairly remain the property of the present holders;

(2) What proportion of the earnings of the Dominion Railway Company may fairly be regarded as attributable to the Canadian Northern lines.

To illustrate our meaning, we will assume that the arbitrators decide that 5 per cent of the Canadian Northern shares shall remain the property of the existing holders,

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and further decide that one-half of the total earnings of the Dominion Railway Company will be fairly attributable to the Canadian Northern lines. Then their decision will mean that, out of any dividend declared in future by the Dominion Railway Company, $2\frac{1}{2}$ per cent (one-half of 5 per cent) will be payable to the existing Canadian Northern shareholders or their transferees. We think the arbitrators should fix this resulting percentage once for all. It should be made a condition of the settlement that the minority shareholders of the Canadian Northern should by deed irrevocable appoint the trustees as their proxy to vote their shares. Care will of course be taken to provide that the Arbitration Board shall have regard only to the Canadian Northern lines, as they exist at the date of the passing of the Act, and that any subsequent increase of revenue due to the expenditure of additional public money shall be excluded from consideration.

THE GRAND TRUNK SHAREHOLDERS.

The position of the Grand Trunk Company is entirely different from that of the Canadian Northern Company. The Grand Trunk Company has five different classes of shareholders; the Canadian Northern has only common stock. The Grand Trunk shares represent—to what extent it is now almost impossible and quite useless to ascertain, for the company is over sixty years old—actual cash paid; the Canadian Northern shares represent no cash, only a possible reversion. The Grand Trunk Company has always paid dividends on some classes of stock; the Canadian Northern common stock has never even had the prospect of an immediate dividend. The Canadian Northern has been economically constructed and is moderately capitalized. The same cannot be said either of the Grand Trunk or Grand Trunk Pacific. The Canadian Northern has a capital of \$54,961 per mile; the Grand Trunk of \$127,340; the Grand Trunk Pacific of \$98,018. Evidently the two companies cannot be treated alike. Evidently also the rights of the five classes of Grand Trunk shareholders differ widely as between themselves. We have come to the conclusion that it is impossible for us to determine these respective rights; that any compensation made to the shareholders for the surrender of their shares must be made, not to them, but to the company as a whole; and that the directors of the company must assume the responsibility of preparing a scheme of equitable apportionment between the different classes, and procuring the assents and the legal authority necessary for bringing the scheme into force.

Dealing with the matter on this basis, we have to consider how the fair compensation to the company is to be arrived at. The report of the company for the year ending December 31, 1915, contains a statement of the share capital as follows:—

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STATEMENT of Stock and Share Capital Created Showing the Proportion Issued 31st December, 1915.

Description.	Amount Created or Sanctioned.			Amount Issued.			Amount Unissued.		
	£	s.	d.	£	s.	d.	£	s.	d.
Four per cent guaranteed stock.....	12,500,000	0	0	12,500,000	0	0			
First preference stock, 5 p.c.....	3,420,000	0	0	3,420,000	0	0			
Second preference stock, 5 p.c.....	2,530,000	0	0	2,530,000	0	0			
Third preference stock, 4 p.c.....	7,168,055	4	6	7,168,055	4	6			
Total, Preference Stocks.....	25,618,055	4	6	25,618,055	4	6			
Ordinary Stock.....	24,797,761	2	7	23,955,436	17	3	842,324	5	4
Grand total.....	50,415,816	7	1	49,573,492	1	9	£842,324	5	4

The total issued may be taken in round figures as \$240,000,000. It will be seen that roughly one-half is preference and one-half ordinary stock. The London Stock Exchange valuation of this nominal \$240,000,000 is at the present time something like \$70,000,000 or \$75,000,000—ranging from about 56 for the 4 per cent guaranteed stock, which for ten years has received its dividend in full (except in one year when it went one-half per cent short), down to about 10 for the ordinary stock, which has never received a dividend. The table below shows the dividend history of the last ten years:—

GRAND TRUNK RAILWAY of Canada—Dividends Paid.

Year.	Guaranteed.			5% First Preference.			5% Second Preference.			4% Third Preference.			Total.	
	%	\$	cts.	%	\$	cts.	%	\$	cts.	%	\$	cts.	\$	cts.
1906	4	1,520,404	60	5	831,428	64	5	615,244	16	3	1,046,036	84	4,013,114	24
1907 ...	4	1,638,952	95	5	831,428	64	5	615,244	16	3	1,046,036	84	4,131,662	59
1908	4	1,861,121	49	5	831,428	64	2½	307,622	08				3,000,172	21
1909	4	1,915,522	07	5	831,428	64	5	615,244	16				3,362,194	87
1910	4	1,960,171	50	5	831,428	64	5	615,244	16	½	174,339	47	3,581,183	77
1911	4	2,080,161	11	5	831,428	64	5	615,244	16	1½	523,018	42	4,049,852	33
1912	4	2,351,148	07	5	831,428	64	5	615,244	16	2½	871,697	36	4,669,518	23
1913	4	2,417,871	06	5	831,428	64	5	615,244	16	2½	871,697	36	4,736,241	22
1914	3½	2,129,166	67										2,129,166	67
1915	4	2,433,333	33										2,433,333	33
10-year average....		20,307,852	85		6,651,429	12		4,614,331	20		4,532,826	29	36,106,439	46
		2,030,785	28		655,142	91		461,433	12		453,282	63	3,610,643	94

It will be seen that the average amount paid in dividends has been \$3,600,000 per annum. So the Stock Exchange valuation practically capitalize the dividends on 5 per cent basis. And this, in a rapidly developing country, might be reasonable, if the dividends had been earned and could be maintained. But in view of the statement of the company's own officers that \$21,000,000, which ought to have been spent out of revenue for maintenance has not been so spent, it cannot be contended that the dividends have been earned. In view of the further fact that the company has to face

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immediate liabilities of over \$5,000,000 per annum in connection with the Grand Trunk Pacific, and of the statement of its own officers that a capital expenditure of \$30,000,000 is immediately required on its own lines to put the company in proper condition to do its existing business, it can still less be contended that the dividends are maintainable. It cannot therefore be expected that the Trustees should acquire the stock from the shareholders on the basis of past dividends. Even if the Government were to relieve them entirely, as suggested by their president, of their unfortunate Grand Trunk Pacific venture—and as we have already said, we cannot think that this request can be reasonably justified—it is evident that the Grand Trunk Company is not, and will not be for some time to come, in a position entitling it to pay out any money at all in dividends. We regard the entire share capital of the company as being intrinsically of but small value at the present time. On the basis of present value of maintainable income the fair compensation would be very small.

Terms of Purchase Recommended.

But we do not think that this is the only basis on which the people of Canada should proceed. We think this is a case for generosity rather than strict justice. Canada is under obligations to the Grand Trunk shareholders, who, in the early days, with but small Government assistance, and in competition with the railways of the United States with their vastly greater resources, built up the first Canadian railway system. In later times the company has had further to meet the competition of heavily subsidized Canadian rivals. And it cannot be said that at any stage of its history the shareholders have obtained excessive profits on their enterprise. On the whole we recommend that, on condition of the surrender by the Grand Trunk Company of their entire share capital, guaranteed, preferred, and ordinary, the Trustees grant a certain annuity, charged as a working expense on the whole undertaking of the Dominion Railway Company, for the first seven years, increasing at the termination of that period by something like 40 or 50 per cent. We have left the figures blank as there will be questions of cash in hand, value of stores, etc., which must make the precise figure subject to negotiation. But our meaning is that the first figure should be a moderate but substantial percentage of \$3,600,000 (the average dividend payment for the last ten years).

Real Value of Grand Trunk Property.

We appreciate that shareholders outside Canada, who can hardly be expected to be fully conversant with the management of their property, will not only fail to see any generosity in this proposal, when it is first made to them, but will believe they are being treated with less than justice. We think it therefore well to set out here in summary form the result of what has been set out at length in previous pages of this report.

1. The revenue of the Grand Trunk applied to dividend has been, on the average of the last ten years, \$3,600,000.

2. To catch up arrears of maintenance, \$21,000,000 must be spent immediately. This sum is nearly equal to six years' dividend payments.

3. To prevent arrears again accumulating, future maintenance charges must be much heavier than in the past; not less than \$2,500,000, according to the President's judgment, on equipment alone.

4. To put the property in proper condition to deal with existing business, \$30,000,000 of new capital needs to be spent at once. Even supposing the company could raise this capital, and only had to pay 5 per cent for it, it would cost an additional \$1,500,000 per annum.

And this is on the Grand Trunk lines alone, independently of the company's liabilities in respect of the Grand Trunk Pacific. These further liabilities, amounting to over \$5,000,000 a year at the present time, and increasing in the near future to over \$7,000,000, need not be again detailed. The chairman of the Grand Trunk in his letter to the Prime Minister of Canada, dated December 10, 1915, has stated: "Under present circumstances it is quite impossible for the Grand Trunk Railway Company to meet the extra liabilities arising from the Grand Trunk Pacific Railway." And in his evidence at our inquiry in Montreal on February 24, 1917, the president of the Grand Trunk stated, not only that it was an impossibility for his company to carry out their contract, but that it always had been impossible. And yet there is no question of the company's legal liability on the contract. And it is the Grand Trunk Company that is primarily responsible for the initiation of the Grand Trunk Pacific enterprise.

THE INTERCOLONIAL AND NATIONAL TRANSCONTINENTAL.

We have recommended that the Intercolonial and National Transcontinental Railways be handed over to the Trustees. And this recommendation we make for various reasons. We are opposed, as we have already said, in principle, to Government operation, and this principle applies to these railways just as much as to the Canadian Northern, Grand Trunk, and Grand Trunk Pacific. But, apart from general principles, there are many strong arguments for the transfer in the special circumstances of the case.

Transfer of National Transcontinental Recommended.

Dealing first with the National Transcontinental it is evident the line cannot be left as it is. Its very name implies that it was built as a National Highway from ocean to ocean. It cannot be left to terminate in a dead end at Winnipeg. Its prospects of becoming a paying concern, and making to the people of Canada an adequately financial return for the \$160,000,000 they have invested in it, are not very good in any case, but its prospects are hopeless if it terminates at Winnipeg. Winnipeg is primarily a collecting and distributing, rather than a producing centre. What it does produce, goes mainly westward. The Canadian Pacific Railway can collect and distribute in the West; it can collect and distribute in the East; it has its own ocean ports and cross-Atlantic connections; and the whole of its traffic between East and West it will carry over its own road, between Winnipeg on the one hand, and Toronto, Montreal and the ocean ports on the other. Exactly the same thing must happen in the case of the Dominion Railway Company, once the Canadian Northern, Grand Trunk, and Grand Trunk Pacific companies are combined into one system. If the National Transcontinental Government Railway is left out of this system, it will starve.

Transfer of Intercolonial Recommended.

IN THE LOCAL INTEREST.

We recommend the transfer of the Intercolonial on three practical grounds: the interest of the Maritime Provinces; the interest of the Canadian taxpayer; and the interest of the railway undertaking itself.

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Speaking generally, the growth of the Maritime Provinces in the last twenty years has been slower than that of the rest of Canada. And yet raw materials are readily accessible, and wages are certainly as low as elsewhere. Now a large and important part of these provinces is served only by the Intercolonial; the Intercolonial is merely a local line, terminating at Montreal, and with no direct connection with the markets of Ontario and the West; and the Maritime Provinces have suffered from this isolation.

The recent congestion on the Intercolonial has clearly demonstrated the inadequacy of its facilities to cope with its business. Either it must construct its own terminals at Montreal, which would cost not less than \$10,000,000 to \$15,000,000, and would be a further instance of unnecessary and wasteful duplication of facilities at the public expense, or it must have access as of right to the Grand Trunk terminals, where at present it comes in only subject to the primary regard of the Grand Trunk for its own business. That it is in the interest of the inhabitants of the Maritime Provinces to be served, not by what is after all only a glorified branch, but by a great through system opening up to them all the markets of the country on an equality with Montreal, Toronto, and the other manufacturing centres, admits of no doubt. And it is in the interest of Canada also, for if one member of the body gains all the members gain.

The absorption of the Intercolonial in the Dominion Railway Company would further afford the opportunity for redressing a hardship from which the Maritime Provinces at present suffer. The Intercolonial pays no local taxes, and this exemption should cease. It never, in our opinion, had any justification. A municipality, whose streets are subject to the burden of Intercolonial railway crossings, has precisely the same claim to treat the railway as a ratepayer and assess it for local taxes, as if the crossings belonged to the Canadian Pacific Railway. Exemption of public institutions used for purely public purposes may perhaps be justified; but in the case of a railway, local taxes are as much a part of operating expenses as transportation or maintenance charges; and they ought to be paid, whoever may be in control of the railway operation.

We are aware that there is a widespread impression in the Maritime Provinces that the Dominion Government is implicitly pledged to give them low rates. Lest there should be any fear that these alleged rights might be interfered with, we think the Act of Parliament should provide that no general increase of the local rates at present in force on the Intercolonial shall be made by the Trustees without the previous assent of the Railway Commission.

IN THE GENERAL INTEREST.

Secondly, we recommend the transfer of the Intercolonial in the interest of the Canadian taxpayers. The capital cost of this railway, according to the returns of the Department of Railways and Canals for 1916, is \$106,312,705.25. To pay interest on this investment the railway ought to earn a net revenue of, say, \$5,000,000. It has indeed recently been ingeniously argued that it ought to have earned interest at a commercial rate from its first inception, and that all the interest that it has not earned during its whole existence ought to be capitalized and compounded to ascertain the real cost of the railway to the people of Canada.

We cannot accept this somewhat fantastic argument. If this theory were accepted, it is manifest that a similar course ought to be followed in the case of ordinary railway

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companies. Interest which, of course, has never been paid, ought to be calculated in the same way, on all the cash subsidies which private lines have received and on the value of all the land grants which they have obtained, and all this ought to be carried into an imaginary account on which imaginary earnings ought to be obtained. Further, the capital account of every railway company ought to be recast in the same way, so as to carry forward into the account the money that ought to have been paid for dividends on the share capital, in years when either no dividends or only insufficient dividends were in fact paid.

Whatever question there may be as to the propriety of endeavouring to earn interest on capital, it will hardly be questioned that the line ought to be so managed as at least to earn operating expenses, including therein a proper allowance for taxes. And even ignoring the early history of the undertaking, and considering merely the years from 1889-1916, during which the greatest advance has taken place in Canada, and the traffic of Canadian railways has shown the greatest increase, the Intercolonial has paid no taxes and still not earned operating expenses. During this period the total operating deficits reported amounted to \$11,188,885.50. The total operating surpluses amounted to \$1,651,239.73. In addition, however, there was, in the years 1912-16, an amount of \$3,046,406.86, charged to working expenses and devoted to renewals, which under the accounting methods in force before that date would have been credited to surplus. Adding together these two latter figures, and deducting them from the deficit, we find that in the twenty-eight years from 1889-1916 there was an accumulated deficit on operation of \$6,491,232.91.

And this is not all. Down to the year 1908 no charges were made against revenue for necessary renewals and replacements. Now, when the plant is added to and improved, it may be right to charge to capital the excess cost of the addition. But charging to capital the cost of mere renewals and replacements cannot be justified. From 1908 till 1911 there was charged to operating expenses, under the head of renewals of rolling stock, rails, and ties, the sum of \$510,000 per annum. But this was quite an inadequate allowance, as is shown by the fact that since then, in addition to the annual \$510,000, the further sum of \$3,046,406.86, already mentioned, has also been charged to renewals.

The result of charging such items as renewals to capital account is clearly shown by the growth of the cost of the railway per mile of line. In the case of a new line, with constant extension of territory and the necessity for new terminals and increase of equipment, such a figure may not prove much. But in the case of an old-established property like the Intercolonial, it certainly, in part, indicates operating losses and improper capital inflation. The return of mileage for the year 1899 shows 1,315 miles, with a cost per mile of \$37,957.36. For 1911, the mileage is shown to be 1,455, and the cost per mile is returned as \$57,419.87. In thirteen years, therefore, the capital cost of the system per mile had been increased on the system's books no less than 51.27 per cent. During the same thirteen years, surpluses of \$1,594,954.64 and deficits of \$3,915,193.39 were reported. It is obvious that the surpluses were illusory and the deficits much greater than returned.

Since 1911 the cost per mile has further increased, but this is largely due to expenditure in connection with the new Halifax Terminals, legitimately charged to capital.

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And since 1912 that the proper practice of charging renewals to working expenses has been adopted.

IN THE INTEREST OF GOOD MANAGEMENT.

Lastly, we recommend the transfer of the Intercolonial in the interest of the undertaking itself. We have no doubt that it will be better operated as part of a great system than it ever can be as an independent property. It is not to be expected that able and ambitious men will do as good work on a mere local railway, with scant opportunities of advancement or distinction, as when they have the chances of promotion which a great system affords. If their prospects are bounded by the horizon of the Intercolonial, they will either grow slack or carry their services elsewhere. We have already referred to the economy which can be effected by the establishment of joint terminals in Montreal. And the same thing is true in the matter of equipment. A nation-wide system can average its provision of rolling stock, and meet temporary shortages in one place from temporary surpluses in another. A small concern can only provide rolling stock to meet maximum requirements, on condition of having a surplus standing idle for the greater part of the year.

Minor Recommendations.

We think the Trustees should not be required to accept the responsibility for various undertakings connected with the railway lines transferred to them, such as, for example, the Grand Trunk Pacific Dry Dock at Prince Rupert, and the proposed harbour improvements at Halifax. We would leave the Trustees to settle by agreement with the Government the list of property not to be transferred to them.

In the case of some of the constituent companies¹ of the Canadian Northern, of which the Canadian Northern Quebec is the most important, the parent company, though in every case it has a controlling interest, does not own all the shares. We think the Trustees should at an early date, by agreement or by legal procedure, take steps to acquire the outstanding shares. This is desirable, not only to avoid possible conflict of interest hereafter, but also to avoid any necessity for keeping separate accounts.

We find that the title to certain property which is used for railway purposes has not yet been vested in the Canadian Northern. It was among the conditions on

¹ The list is as follows :—

Railway.	Total Share Capital.	Held by or on behalf of Canadian Northern.	Held Outside of Canadian Northern.	Percentage.
	\$	\$	\$	
Canadian Northern Quebec Railway Co	9,550,000	2,000,000	2,405,400	74·7
Quebec and Lake St. John Railway Co.	4,524,000	5,144,600	521,200	88·46
Duluth, Winnipeg and Pacific Railway Co. . .	6,000,000	4,002,800	2,940,000	51
		3,060,000		

There are also outstanding small amounts of from 500 to 3,000 shares in other companies. But these are presumably only directors' qualifications.

^aThe Canadian Northern Railway Company owns \$2,000,000 stock of the Canadian Northern Quebec directly; it also owns 71·9 per cent of the stock of the Northern Consolidated Holding Company, Limited, which owns \$5,144,600 stock of the Canadian Northern Quebec.

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which the Government loan of \$45,000,000 was granted in 1914, that this should be done. We pointed the omission out to Mr. MacLeod, the company's general manager, who stated that it was merely on oversight, and that the intention was that all titles should be got in.

In cases where the title has not been got in, it is, we understand, in the hands of affiliated interests. We say "we understand" because in the limited time at our disposal we have not attempted to have search made of all the different titles involved. It is clear, however, that all lands on which there are Canadian Northern rails, whether main or siding tracks, or switches leading to its elevators, or team tracks, ought to be vested in the company, and not left in the hands of any affiliated interest or constituent or a subsidiary company, even although the Canadian Northern Company may have a stock control of the company.

We think that the Act should vest in the Canadian Northern Railway Company all lands which have actually been put to the purposes of the railway system, subject to all equities (other than those of any of the affiliated companies, or of Messrs. Mackenzie & Mann, Limited, or of those gentlemen in their personal capacities) outstanding at the date of the publication of this report.

We think that the Act should also refer to the Exchequer Court for arbitration the question of all other outstanding equities, if any. It is of course manifest that, to the extent to which outstanding claims may be found to exist, reductions would have to be made in the valuations which we have placed upon the assets of the Canadian Northern Railway Company.

The Trustees will also have to consider at an early date the position of the holders of the Canadian Northern 5 per cent Convertible Income Debentures. These debentures to the amount of \$25,000,000 were placed in London, in the years 1911 and 1912, some of them at a considerable premium, and the company obtained more than \$24,000,000 in cash for them. The trust deed under which they were issued charges them upon the assets of the company subject to existing charges, but entitles the holders to receive interest only from income if earned. Since June, 1915, no interest has been paid. The Dominion Government in 1914 recognized that in respect of capital those Income Debentures rank in front of the Government's own loans. But the income on them is not being earned. Nor is it likely to be earned, at any rate in full, in the proximate future. The fact, however, that they are a charge upon the assets, or rather upon certain assets, and upon the income, if earned, of the Canadian Northern or some portions thereof, might cause complications in the operations and accounts of the unified system. And we think that on its own merits their case is entitled to sympathetic consideration. We think that the Trustees should negotiate a settlement with the holders, on the basis of substituting for their right to 5 per cent in the indefinite future a right to receive either a lower rate of interest, say, perhaps 3 per cent, from the date of vesting the Canadian Northern in the trustees; or in the alternative, say, 1 per cent at once, 3 per cent after a certain date, and 5 per cent from and after a date still further postponed.

Legal Position of Trustees.

The Trustees would hold the Intercolonial and Transcontinental lines as legal owners of the physical property, and they would hold the Canadian Northern, Grand

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Trunk, and Grand Trunk Pacific through their ownership of the capital stock. The existence of these three companies, and also of their various subordinate companies, would nominally continue unchanged, and there could consequently be no question of the disturbance of the rights of the bond and debenture holders.

OPERATION OF DOMINION RAILWAY COMPANY.

So soon as the railways above specified have been transferred to the Trustees, we recommend that they should proceed to operate them under their own control. Some time must necessarily elapse before all the transfers are made. But we see no reason why the Trustees should not take charge of each railway as soon as the arrangements for its transfer are completed. The ultimate purpose, to be kept in mind from the beginning should be that all the railways should be operated as one system. For purposes of day to day management there should, we think, be established an Operating Committee, as members of which the Trustees should have power to add to themselves not more than four officers having the rank of vice-presidents. Sitting in this committee, these officers should have votes equally with the Trustees. But all matters of policy and finance should be reserved for the Trustees alone. We would leave it to the future discretion of the Trustees whether they would operate the railways as a single system from one centre, or whether they would constitute two, or it may be more, grand divisions.¹

Finance of Dominion Railway Company.

Under the scheme which we recommend the Trustees will enter into possession of a complete and self-contained system of 20,000 miles. The present fixed charges amount to about \$34,000,000 per annum, or \$1,700 per mile. If we allow another \$6,000,000 for annuity to Grand Trunk shareholders, for composition with Canadian Northern Income Debenture holders, and for interest on new capital required immediately, there will be at the outset fixed charges of roughly \$40,000,000 or \$2,000 per mile. In respect of the 3,777 miles of this system which are comprised in the present Government Railways there will not be a single dollar of bonded indebtedness. And this fact will be of considerable help to the Trustees in their necessary financing. We assume that, in addition to the purchase of equipment by means of equipment trusts, it will be necessary to raise a good many million dollars for improvements and betterments, some of which, such as a new Grand Trunk yard at Niagara Falls, are very urgently needed at the present moment. We suggest that a General and Refunding Mortgage be created, charged first upon the Intercolonial and Transcontinental lines, and secondly upon all the remaining lines of the system, subject to the existing mortgages. The amount of the mortgage should be unlimited. The rate of interest on each issue should be determined at the time the issue is made. We do not think that an express guarantee of the Government would be required. For the Intercolonial, which has no bonded indebtedness is now

¹We understand that the Canadian Pacific Railway had at one time independent operating and traffic vice-presidents, for the lines East and West respectively; but that of recent years this has been changed; and that now the whole system is controlled from one centre, and that the Canadian Pacific Railway Board are satisfied that the change has been an improvement.

earning a substantial net income, and when it becomes part of a great system we cannot doubt that this net income will increase. In any case the guarantee should be unnecessary in a comparatively short time. For a system of 20,000 miles in a rapidly developing country should be able, before many years are out, to carry unaided bonded indebtedness, which would not, we estimate, need much to exceed \$2,000 per mile.

Operation to be on a Commercial Basis.

We have recommended that the Intercolonial and the Transcontinental lines should be handed over free of cost for the reasons which we have given above. But we think it should always be borne in mind, both by the trustees and by the public, that the real capital of the new system includes the cost of these lines. In other words the trustees are responsible for a return, not merely on the capital of the companies' railways acquired, but also on the capital invested in the Government railways. For though the Government railways have no separate capital account, properly so called, their construction has cost the people of Canada \$276,000,000, and the people of Canada are paying interest on this amount every year out of the general taxation of the country.

We would go further and lay it down in terms in the Act of Parliament creating the Board of trustees that it was the duty of the trustees to operate their system as a commercial concern, and to make no general reduction in rates, unless ordered so to do by the Railway Commission, until interest at a reasonable rate was earned on the whole capital value of the undertaking. And this for two reasons. We believe that the obligation to work the system as a commercial concern in competition with a well established and well equipped rival will be a stimulus to efficient and economical management. And further we think that reductions, in favour of certain classes of business and certain commodities, which bring the railway rates below a reasonably remunerative basis, are wrong in principle. Their effect is to conceal the fact that a bounty is being given to certain persons and certain places at the expense of the community at large. If bounties are to be given, as to which it is not for us to express an opinion, we think they should be openly voted by Parliament, and not given under the disguise of a railway rate reduced to an unremunerative basis.

Wide Powers to be Given to Trustees.

We consider that, subject to the jurisdiction of the Railway Commission, the trustees should have the widest powers in the management of their undertaking. They will have to decide how best they can secure both efficiency and economy by combining what have been hitherto competing systems. They must decide what new connections can be made to provide shorter routes; which lines shall be operated as main lines and which only as branches; in what cases two single lines can be used as one double line; where new extensions can be profitably built; how new capital can best be provided; whether any of the existing lines shall be, at least temporarily, abandoned. But they should always keep in mind that the intention is, not to establish local monopolies, but to maintain reasonable competition between their system and that of the Cana-

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dian Pacific Railway. They must have discretion to say how far net profits are imperatively required for railway purposes, and how far they may be safely taken to pay a dividend on the share capital. In a word, we would entrust to the trustees all the responsibilities and powers which in an ordinary company are divided between the directors and the shareholders. We believe that the desire to render the best possible account of their stewardship to the people of Canada will be a sufficient motive to induce them to manage the railways efficiently and economically.

Financial Responsibility of Government.

We have recommended that the Government should assume responsibility towards the trustees, but not directly towards the present holders, for the interest of all the securities charged on the new combined system. We cannot attempt to forecast with any accuracy what that liability will be, but the following table which we have compiled shows the results for the year ending June 30, 1916, of the operation of the various undertakings which we propose should be put together.

FROM REPORTS TO DEPARTMENT OF RAILWAYS AND CANALS, JUNE 30, 1916 (EXCEPT G.T.P. BRANCH LINES),

	Can. Northern.		Grand Trunk.		Grand Trunk Pacific.		G. T. P. Branch Lines.		Intercolonial.		Transcontinental.		Total.	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
Operating revenues.....	35,476	275 06	39,155	040 10	6,963	188 88	1,319	599 16	15,686	661 91	5,798	516 09	104,399	281 20
Operating expenses.....	25,244	186 12	28,782	012 69	5,902	813 30	1,370	133 51	13,323	183 16	5,360	061 58	79,991	420 36
Net operating revenue.....	10,232	088 94	10,373	027 41	1,060	345 58	Loss	50,534 35	2,363	478 75	429	454 51	24,407	860 84
Outside operations.....					10,588	55							10,558	55
Taxes.....	741	508 11	853	596 39									1,595	104 50
Operating income.....	9,490	580 83	9,519	431 02	1,070	304 13	Loss	50,534 35	2,363	478 75	429	454 51	22,823	314 89
Other income.....			3,634	123 65							37	680 84	3,671	804 49
Gross income.....	9,490	580 83	13,153	554 67	1,070	304 13	Loss	50,535 35	2,363	478 75	466	135 35	26,495	119 38
Interest on funded debt.....	9,885	153 14	7,644	631 07									17,529	784 21
Other charges.....	506	010 29	2,415	539 70									3,897	515 14
Dividends.....			12,433	353 33					167	214 29	808	750 86	2,433	533 33
Total income deductions.....	10,391	163 43	12,493	504 10									23,860	632 68
Surplus and loss for year.....	Loss	900,582 60	660,050 57		*1,070	304 13	Loss	50,534 35	2,196	204 46	Loss	342,615 51	Surplus—	2,633,486 70
Profit and loss items.....	267	885 85											Deduct—	267,885 85
													Surplus—	2,365,600 85
Add interest to be provided for.....	5,445	389 56			6,668	084 04	538	760 16					12,652	233 76
Add Estimated loss, Prince Edward Island Railway.....													250,000	00
Total to be provided.....													12,902	333 00

* Before charges.

† Div. on guaranteed stock.

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Prospects of Dominion Railway.

From this table it will be seen that there was a nominal surplus of income over expenses and fixed charges of \$2,365,000. But the above figure took no account of interest which had to be provided for on the Canadian Northern, Grand Trunk Pacific, and Grand Trunk Pacific Branch Lines, amounting together to \$12,650,000; nor for a loss of some \$250,000 on the operation of the Prince Edward Island Railway. The total of these items is \$12,900,000. Deducting the surplus, it would appear that, if these railways had been in the hands of the trustees for the year ending June 30, 1916, and if all the capital charges had been met out of income, the trustees would have had to call upon the Government for about \$10,500,000 to make up the deficiency.

We assume that the results for the year ending June 30, 1917, will not be greatly different. Gross receipts may rise, but operating expenses are rising fast, more especially owing to the high price of coal, the severe weather, and the congestion of traffic. When the trustees assume office they will have to face, in addition to the present interest charges, the cost of settlement with the convertible income debenture holders of the Canadian Northern, of the annuity payable to the Grand Trunk shareholders, and the interest on the capital necessary to complete the system and to make urgently needed betterments and additions. Further, for reasons we have already given, we do not consider that the Grand Trunk dividend is a real net surplus. It ought to go back into the maintenance of the property. On the other hand, the economies resulting from the amalgamation of the Canadian Northern, Grand Trunk, and Grand Trunk Pacific systems ought to be very large, as soon as time is allowed for the elimination of wasteful duplications. We do not venture to predict; but we should hope that the economies will at least balance the additional charges for new capital.

If then we take as a starting point a deficiency of roughly \$12,500,000 a year; if we assume that this will not seriously increase for the next year or two, but will not, on the other hand diminish; then in order to reach a position of solvency, the Dominion Railways would need to earn an additional gross income of some \$50,000,000, and to retain one-quarter of that amount as net. The present gross income is well over \$100,000,000; and it is not unreasonably sanguine to hope that it may increase 50 per cent in the course of six or seven years, if Canada continues to progress at a normal rate. But that depends, not on railway management, but on the incalculable future.

We do not make any detailed estimates either of probable earnings or of probable reductions in operating costs to be obtained by the trustees' system. We have, however, every confidence in the country, its resources and possibilities.

The Canadian Pacific has been and is a great success. Combined under a common management, with one evenly balanced transcontinental system in the place of two disjointed ones, with adequate branches both in the West and in the East, we are confident that in the not far distant future the success of the Canadian Pacific ought, at least to a very large extent, to be repeated. The Dominion Railway at an early date should have an operating revenue as large as that of the Canadian Pacific. With proper economic and politically undisturbed management, the attainment of a satisfactory financial result is only a question of time.

Specimen Economies Resulting from Combination.

We will not risk embarrassing the future management by enumerating possible economies in detail. But it is clear that very considerable savings can be made by the amalgamation of duplicate outside and local agencies; by joint stations and joint service at many points; by coupling up the Prairie branches so as to afford the shortest outlet to market centres and the like. Great economy can also be secured in operation of the through traffic. East of Winnipeg this will require a small amount of new capital expenditure. We understand that the land between Cavell station on the Transcontinental and Longue Lac station on the Canadian Northern lends itself to cheap and easy railway construction. The distance is 35 miles. By the construction of this short link, a great saving of operating mileage can be made, and the best portions of both systems utilized. By the combinations of the Transcontinental from Winnipeg to Cavell, the new link from Cavell to Longue Lac, and the Canadian Northern forward from that point, a route superior from every point of view to the existing routes can be formed for Toronto business. The Winnipeg-Toronto mileage by this route would only be 1,197 miles. This is shorter than any of the three existing routes, which are as follows: Canadian Pacific, 1,232; Transcontinental and Grand Trunk, 1,256; Canadian Northern, 1,309. The combined route will also greatly improve the handling of traffic from Port Arthur to all points on the Transcontinental east of Cavell. This traffic at present is hauled back to Superior Junction, 188 miles to the northwest, before it starts on its eastward journey. And at present much of the coal used on the line follows this roundabout route. For grain sent east from the Port Arthur elevators to Quebec and beyond, the combined route will also offer better facilities than either line could afford separately.

Similar economies can be secured west of Winnipeg, without any expenditure beyond that necessary for coupling up closely adjoining tracks. The Winnipeg-Vancouver route can be shortened 40 miles. We need not multiply instances or attempt to translate the resulting economies into dollars. It is sufficient to say that the mere running expenses of a through freight train are not less than 80 cents a mile. Fifty miles means \$40. Multiply this by 365, and there is a saving of nearly \$15,000 per annum on each train, sufficient to pay the interest on \$500,000 Grand Trunk Pacific 3 per cent Dominion guaranteed bonds. And this is only the mere running cost, and takes no account of other transportation expenses or of the reduction of maintenance expenses due to ceasing to maintain superfluous tracks.

PART VI.

THE DOMINION AND THE PROVINCES—PUBLICITY—GENERAL.

Railway Commission Control.

We have referred more than once in this report to the Board of Railway Commissioners for Canada, and have recommended that the system of the trustees should

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be subject to their jurisdiction. We attach great importance to this recommendation. Hitherto this Board has had jurisdiction only over the railways that are in the hands of companies. It has had no jurisdiction over Government lines. We think that this distinction cannot be justified, and that the Commission should have jurisdiction over all railways other than those operating solely under provincial charters. The public may from time to time have just cause of complaint against the management of any railway. It is not right that any one, even a Government official or a public trustee, should be judge in his own case. Moreover, unless the final decision in matters of rate policy and the like is in the hands of a single authority, there may be in Canada two conflicting policies at the same time. There is yet another reason on which we would lay stress. Railway policy is a sealed book to the ordinary citizen. Why tariffs should be fixed as they are, why the train service should not be arranged so as better to suit his individual requirements, why cars cannot always be available for everybody everywhere, he cannot understand. The normal attitude of the public towards the railway management, whether in the hands of a company or a Government, is one of mistrust, if not of active hostility. It is a good thing both for the railway itself and for its patrons to bring the management out into the open; to have the reasons why such and such conditions exist, why certain concessions demanded cannot reasonably be granted, frankly explained in public. If there is nothing else gained, it is a great thing to have brought the complainant and the railway officer face to face. Even when they fail to agree, they are likely to understand each other better in the future.

Commission to Report on Charters.

In a second respect also we recommend that the jurisdiction of the Railway Commission should be enlarged. Charters for new railways are granted by the Dominion for 37,862 miles of line. Only 453 miles were actually built. In the two following years there were granted, according to a statement made in the Senate by the Parliament in great numbers. In the years from 1900 to 1908, 116 charters were granted. Hon. Mr. Davis, on April 6, 1910, respectively, 68 charters for about 68,000 miles, and 75 charters for about 75,000 miles. We think that no charter should be granted till the proposals made have been investigated by the Commission, and the Commission have reported whether or not, in their opinion, the construction of the proposed line would be for the public advantage. The opinion of the Commission will not necessarily bind the action of Parliament. But Parliament, before deciding, should have the benefit of the advice of an expert and impartial authority.

And on Subsidies and Guarantees.

We think also that no subsidy or guarantee should be granted except after a similar report from the Commission; and that no subsidy or guarantee should be voted in any session, unless it has been provided for in the financial budget of the year; and unless a substantial deposit of cash or securities has been made by the promoters, to prove the bona fides of their application.

Overlapping of Dominion and Provincial Control.

Cases have occurred in the past and may again occur in the future, in which railways are chartered by Provincial Governments, competing with railways under Dominion charters, and so withdrawing from the latter some portion of the traffic required to secure the solvency of their line. This is not in the public interest. It cannot be for the general advantage of Canada that a provincial charter should be granted, and in most cases also provincial financial assistance given, with the result in the first place of withdrawing traffic from a road with a Dominion charter, and so forcing that road to fall back upon the guarantee which has to be met out of the general taxation of the country; and secondly, of placing upon the province a burden of guarantee which the province subsequently finds itself unable to bear, and which ultimately it has to throw back upon the Dominion itself. The Dominion Government, when the Canadian Northern applied for the large loan of \$45,000,000 in 1914, was confronted with the possibility, if not probability, that some of the provinces would default on their guarantees as the result of the entirely disproportionate liabilities which they had assumed.

It would perhaps be difficult for the Dominion and Provincial authorities to agree upon such an amendment of the British North America Act as would for all time prevent the recurrence of such a situation as occurred in 1914, as a result of the provinces deeply pledging their credit, not for an intra-provincial, but for an extra-provincial undertaking, clearly outside their proper ambit. The Dominion Government ought, however, to use the existing powers of the Act. The policy should be laid down that, so soon as any provincial legislature incorporates a railway, it becomes the duty of the Railway Commission forthwith to investigate the necessity in the public interest of its construction; and further, in cases where financial aid by guarantee or otherwise is given by the province, to ascertain what provision has been made for meeting the liabilities which may thereafter accrue. The Commissioners should with all speed report their findings and the evidence on which they are based to the Governor General in Council. And in any case in which it is found that the railway is not required in the public interest, or that guarantees have not been accompanied by proper financial provision, the Governor in Council should exercise his undoubted prerogative and disallow the provincial Act. It is necessary for the sake of the credit of the provinces as a whole to make sure that no province with a population of less than 400,000 shall again take the responsibility for a guarantee of \$40,000,000 in respect of a single undertaking.

We think also that a single company should not be under duplicate control. Take for instance the Canadian Northern main line. If it is not for the public advantage of Canada as a whole, it has no justification for existence. Yet the portion of the line in British Columbia was constructed under a British Columbia charter; and a small section of the line in Saskatchewan under a Saskatchewan charter. It cannot be reasonable in principle that one portion of the through route should be regarded as of general advantage, while another portion of the same route, feeding it and being fed by it, is regarded as of only local interest. And from the point of view of practical administration it is highly inconvenient. We recommend that, in

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respect of all future charters, the Dominion Government come to an understanding with the Provincial Governments that a railway company shall be either wholly national or entirely local. In other words, neither provincial charter nor provincial aid should be given to companies or subsidiaries of companies already possessing a Dominion charter; and on the other hand Dominion aid should only be given to companies with a Dominion charter.

We further recommend that there be conferred on the Commission power to prescribe minimum as well as maximum rates, so that reckless and unfair competition may be prevented. A railway that gives to any members of the public a service below cost is unfairly discriminating against the rest.

Audit and Publication of Accounts.

We think it is of great importance that adequate accounts and statistics should be kept and published. We consider that the Board of Trustees should keep and furnish to the Railway Commissioners, and publish for general information, exactly the same accounts and statistics as the other railway companies are required to furnish. Further, we think the accounts of the Board of Trustees should be continuously audited by a firm of public accountants, appointed by the Finance Minister. This firm should be selected from those with special experience of railway work. And they should not only conduct a financial audit in the strict sense, but should be instructed to advise the trustees from time to time what improvement in accounting methods can be introduced, and what special investigations of cost can be undertaken with good hopes of economics resulting. It is within our knowledge that modern methods of cost accounting are at the present time being applied to railways on this continent with considerable success. And we feel that in taking over the management of so large an undertaking, with a mileage exceeding that of any railway system in the world except that of the Prussian State, the Trustees should have the benefit of the best and most up-to-date advice obtainable. The auditors should make a full report to Parliament once a year on the financial status of the Dominion Railway.

The Railway Commission should in each year submit to Parliament the accounts received both from the Dominion Railway and from the other railway companies and should accompany them by a report of their own. This report should set out in as simple and concise a manner as possible the financial relations between the Dominion Railway and the Government, so that every citizen may have a clear idea once a year what total amount of taxation he is called upon to pay for railway purposes. The report would naturally divide the total charges into subsidies, guarantees, and other suitable heads. And these charges should be taken up into the general budget of the Finance Minister as a separate and distinct entry. Any subsidies or guarantees given by the Government to railways other than those comprised in the Dominion Railway system should be included by the Finance Minister in the same statement. It must be for the Government and the people of the country to decide how much money they will find out of the general taxation for their railways. But, in order that they may decide rightly, it is essential that they should have full information, and that it should be brought before them in an easily intelligible form.

At present railways operating solely under provincial charters are under no obligation to make returns to the Dominion Ministry of Railways. Consequently there is no complete record of the entire railway activities of the country. We think that the Dominion Government should come to an understanding with the Provincial Governments that returns should be made to the latter by their local companies in the same form as is required in the case of Dominion companies, and that copies of these returns should be filed also with the Dominion Government.

Railway Councils.

There is another matter that we desire to bring to the attention of the Government and the Trustees. In several countries in Europe, more especially in Prussia, there has been developed with great success an organization of Railway Councils. These councils are both National and Regional. The National Council in Prussia is composed of: (1) official representatives of the Government Departments specially concerned with railway questions, the Ministers of Communications, Commerce, Agriculture, etc.; (2) of representatives of Chambers of Commerce, of Agriculture, of Mines, and other persons competent to speak for large sections of railway customers. The Regional Councils are of a similar constitution, but on a smaller scale as benefits their local limitations. These Councils meet twice a year or oftener, and discuss a prepared agenda with the chiefs of the railway service. They are competent to deal with questions of rates and fares, facilities, extensions, improvements and all other matters affecting the public interest. They have no executive powers whatever. They can only criticize, dissuade, or recommend. But the universal testimony of competent observers is that the system is a success; that the influence of the Councils is considerable, and the result harmony and absence of friction between the railway administration and the public.

We do not think that the time is ripe for the formal organization of a similar system in Canada. But we think the central idea is valuable. And we suggest that the Trustees, when they get into harness, should consider the propriety of calling a conference of representatives of merchants, manufacturers, agriculturists, mine-owners, etc., and discussing with them all such questions as involve the interests of the public as well as the railway. And we think the Canadian Pacific Railway should be invited to join the conference. If the experiment proves a success, it will no doubt be repeated. And we should hope it would ultimately result in a permanent organization.

Railways in Excess of Existing Requirements.

We feel that we ought to draw attention to another important point. There are now three trunk lines in existence running from Winnipeg through the comparatively empty country north of lake Superior. There is very little traffic, and not much prospect for its early development. The through traffic will be shared, in what proportion the future must decide, between the three routes. But we may assume that the Canadian Pacific Railway will be able to retain on its own through route all the traffic which it itself originates. And the two new routes will only get the

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balance to carry. It cannot, we think, be expected that this balance will be sufficient for a good many years to come to make these two lines self-supporting. It seems to have been generally assumed that they would afford an important outlet for the grain of the Prairie Provinces. Evidence that we have had before us seems to show that only quite a small fraction of the grain exported from these provinces has hitherto followed the rail even as far as Montreal. The proportion that goes through all the way by rail to the Atlantic seaboard must be even smaller. And there seems no reason to suppose that this proportion will vary to an important extent. For a difference of something like 10 cents per 100 pounds between the charges for rail carriage and water carriage respectively—and this we understand to correspond to the normal state of affairs—will always enable the water routes to retain their hold on the traffic. It follows therefore that an increase of 100,000,000 bushels of wheat exported from the prairies might only mean an increase of 2,000,000 bushels, that is 2,000 carloads, or fifty train loads, of railway traffic. This conclusion is borne out by statistics of the Canadian Pacific Railway, from which we find that in the year 1911, out of a total revenue on the Lake Superior Division (the line between Fort William and Sudbury), amounting in round figures to \$12,000,000, less than \$900,000 were earned from the carriage of grain and flour, including grain and flour for local consumption as well as for export, while \$6,100,000 were earned from other freight, and \$5,000,000 from passengers, mail and express.

To show how much traffic is required to fill a railway up to its capacity and to enable it to pay interest on its cost of construction, we have made the following calculation. The Minister of Finance stated in Parliament on May 15, 1916, that in the eleven months ending February 2, 1916, which included the record harvest of 1915, Canada exported 180,000,000 bushels. This is equal to 5,400,000 tons of grain. We will assume that the whole of this grain went from Winnipeg to Fort William-Port Arthur. There were three roads to carry it. This gives 1,800,000 tons available for each road. Assuming the trains to run with an average net load of 1,200 tons—and in fact they usually carry much more—each road would need to run 1,500 trains, or for the eleven months an average of only $4\frac{1}{2}$ trains per diem. Evidently, even under the quite exceptional conditions of the harvest of 1915—and how exceptional this was, is sufficiently shown by the fact that in the corresponding eleven months of the preceding year the export was only 90,000,000 bushels, or just half—the three railways would not be worked to anything like their maximum capacity. Let us see what the net earnings would have been. We take the average rate for the carriage of grain as 4.2 mills per ton per mile, and we will assume an operating ratio of only 66 per cent. Then the net earnings would have been 1.4 mills per ton per mile. And, as 1,800,000 tons went over each road, the net earnings would have been $1.4 \text{ mills} \times 1,800,000 = \$2,520$ per mile of road. These net earnings would pay interest at 5 per cent on a cost of road amounting to \$52,400 per mile. Now the average cost of a mile of road in Canada is over \$70,000. In other words, if we assume that the roads between Winnipeg and Port Arthur were built at an average cost, even the exceptional volume of grain traffic of the year 1915 would not alone have sufficed to pay interest at 5 per cent on the construction cost, though the whole grain traffic of the prairies was concentrated on them.

Highway Improvement.

We think the Government would do well to give serious consideration to the question of the cost of bringing grain from the farm to the railway station. The desire of the farmer to reduce the cost of marketing his grain to the lowest possible point is natural. We do not believe that any serious reduction of rail rates can be expected, and no one can say what ocean rates will be in the future, but we think that the wagon cost is capable of considerable reduction. We find that an average rate per 100 pounds from Battleford, taking this as a typical point, to Liverpool, may be put at not more than 50 cents by the all-rail route to Montreal. By water from Port Arthur, which route carries the vast proportion of the traffic, the through rate would not be more than 40 cents per 100 pounds on the average. On the other hand, typical examples of the cost of wagon haulage have been brought to our notice. We find instances of a cost of 33 cents per 100 pounds for a distance of 12 miles, and of 54 cents per 100 pounds for 35 miles. And we are informed that in some cases grain has to be hauled as much as fifty miles to a station. In other words, in cases such as these the cost of delivery at the station is as much as or even more than the total through rate from the station to Liverpool. What method should be adopted to cheapen local haulage is a matter for detailed consideration in each individual case. But, either by road improvement, coupled possibly with an organized system of mechanical traction, or by the construction of short spur lines of the lightest and cheapest possible type, we are persuaded that a good deal might be done at a very moderate expense. And we therefore commend the matter to the serious consideration of both the Dominion and the Provincial Governments.

The Hudson Bay Railway.

We understand that construction work on the Hudson Bay line has been suspended. We think that the work should not in any case be recommended till more urgent needs have been met and money is more easily procurable. And if the work on the line is begun again, we think it should be done in the most economical manner possible, and only up to the standard of a local line, bearing in mind that it cannot be expected for many years to come to be self-supporting. Considering the small advantage in rail mileage from the grain-growing areas, which the Hudson Bay possesses over the existing routes to Port Arthur, and that from many districts it possesses no advantage at all; considering further the short and uncertain period of navigation in the bay, and that grain consigned to Port Nelson will consequently always be liable to be detained there for nine months till navigation is again opened; considering that higher ocean freights may be expected to absorb, if not more than absorb, any possible saving in rail rates, we cannot believe that this route will ever secure any serious share in the export trade. Still less can we think that it will handle an import business. Unless considerable mineral wealth should be discovered in the territory which this line will open up, it must, we fear, continue to be almost indefinitely a burden upon the people of Canada. And everything that can be done should be done to make this burden as small as possible.

Steamship Connections.

The question of steamship connections on both oceans is referred to us. We have not reported on it. To deal adequately with a question of such vast range was impossible in the time and with the means at our disposal. Further, the complete revolution that the war has caused in the shipping trade of the world would, we feel, make any conclusions or recommendations based on a study of either war or pre-war conditions valueless for guidance after the war. The question of steamship connections naturally involves the question of ports. This question also we have refrained from touching. For port facilities depend on available steamship connections quite as much as steamship connections on the facilities available at the ports.

Tendency of Railway Rates to Rise.

Before concluding our report we desire to make one observation of a general nature. The average ton-mile rate in Canada in the last financial year was .751 cents; in the United States the figure was .732 cents, which is practically the same. In the United States it is coming to be generally understood that this rate is too low to give the railway companies an adequate return on their existing capital and that consequently new capital cannot be attracted to railway investment in sufficient amount to provide for necessary new expenditure. And this fact was to some extent recognized in October, 1914, by the Interstate Commerce Commission in their approval of a flat increase of 5 per cent (with certain exceptions) on all tariffs in the portion of the United States adjacent to Eastern Canada. And if an average rate of .732 cents is inadequate in the United States, where traffic is far more dense, and where climatic conditions are less rigorous, much more is an average rate of .751 cents inadequate in Canada. It is true that with the present rates the Canadian Pacific Railway pays a dividend of 7 per cent from railway operation. But as we have already pointed out, that company has some \$200,000,000 invested in the property on which no interest has to be paid. Were this sum represented by ordinary stock, the dividend from railway operation would be not 7 per cent but 4 per cent. And the Canadian Pacific has the cream of the Canadian business.

Necessity for Immediate Action.

It is to be anticipated that difficulties, more or less great, will need to be overcome before a final settlement can be reached with the Grand Trunk and Canadian Northern Railway Companies. We realize that, if the matter were dealt with in the ordinary manner, it might be a matter of months, if not years, before a final settlement was reached. The pressing public interest demands that the matter be not so treated.

We think instructions should be given by the Government forthwith, without waiting for further action on this report, to the Canadian Northern and Grand Trunk Pacific companies to discontinue all expenditure on works in hand, unless and until express permission is received for their continuance.

We will enumerate certain other matters that will not brook delay. In the West the Canadian Northern is not giving, and is not able to give, adequate service to the grain-growers in some important districts which are dependent on its lines. The situation in the Goose Lake district is highly unsatisfactory. The branch is in bad shape and is not fit to do the business offering. There is absolutely no room for doubt as to the lack of freight cars and the resulting inconveniences, and even in many cases distress. In the East the position of the Grand Trunk is most unsatisfactory. Beyond question the system immediately requires at least 200 more locomotives and at least 10,000 freight cars. If coal famines are to be avoided, and the proper winter movement kept up, the line from Burlington Junction to Fort Erie urgently requires double tracking. Other improvements are imperative. The question of electrification ought to be taken into consideration forthwith.

If things go on as at present, the traffic conditions of this year will in all probability return in an aggravated form next winter. The old equipment will be a little older, the roadbed will be in a little worse condition. And the situation in Eastern Canada has been so bad this winter, that there has been much difficulty, specially at Grand Trunk points, in maintaining a supply of grain and flour from the West. It is imperative that strong and efficient action be immediately taken.

Recognizing the probability of delays, caused by the efforts of the companies to secure better terms from the Government, we think that, in order to protect the business interests of the country, the Government should immediately put itself in a position to obtain orders appointing receivers for the Grand Trunk and Grand Trunk Pacific systems. We recommend that, at the present sitting of the House, an Act be passed constituting the Board of Trustees, so that, in case receiverships are necessary, the Trustees may, on the application of the Government, under its existing rights as a creditor, be appointed Receivers. They would then be in a position to take, through the courts, the necessary steps to vest the properties in the Dominion Railway Company so as to constitute the new system that we have recommended. Should the companies show themselves ready and anxious to come to a prompt agreement, actual application to the Courts would of course not be made.

We feel that the appointment of receivers is not in the interest of the country's credit. It certainly is not in the interest of the companies, as the evidence of this report shows that the property of the Grand Trunk Company, if it were put into a receiver's hands, would leave little or nothing for the shareholders. The result of court proceedings would probably be to divest the shareholders of all interest, and to place the Government in the position to take, to the fullest extent, the advantages of their legal position as holders of defaulting securities. But, though we hope receiverships will not be necessary, we think the Government must face the possibility of being compelled to take the course we have indicated.

In the case of the Canadian Northern Railway Company no proceedings in court are requisite. Under the provisions of section 24 of the Canadian Northern Railway Guarantee Act, 1914 (4-5 Geo. V, chap. 20), the Governor General in Council has power, when authorized by Parliament, to declare by Order, if default is made by the company in payment of interest on the \$45,000,000 guaranteed securities (the interest on which is at present being found by the Government) that the equity of redemp-

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tion of the company is absolutely barred and foreclosed; and thereupon the whole property becomes vested in His Majesty in right of the Dominion of Canada.

If receiverships become necessary, the advantage of appointing the Trustees as receivers is obvious. The Trustees, with the Government behind them, and with the approval of the court, would be in a position to operate the roads as a combined system, to purchase much needed rolling stock, and to make essential improvements, in a way that no ordinary court receiver could do. Receiverships in the ordinary sense would only result in greater traffic congestion than ever, and in losses not only to the shareholders but to the country at large.

PART VII.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS.

We summarize our conclusions and recommendations as follows:—

1. The mileage of Canadian railways is very great in proportion to the population of the country. It has increased out of proportion to the increase of population.

2. Canada's natural waterways make railways less absolutely necessary than in other countries.

3. The net return is so low as to prove that more railways have been built than can be justified on commercial grounds under present conditions.

4. The public investment in railways is very large. The total amount of public capital involved in direct construction of Government lines, and cash aid, land grants and guarantees to private companies, is \$968,451,000, not counting the value of lands still unsold.

5. Public aid to the principal companies, including subsidies, land grants, and guarantees, amounts to over \$680,000,000. In the case of the Grand Trunk Pacific it amounts to nearly two-thirds of the total investment; in the case of the Canadian Northern to over three-quarters.

6. There have been three phases of company development: (1) unaided enterprise, (2) assistance by subsidies and land grants, (3) assistance by guarantees. A guarantee policy is dangerous and its wisdom questionable.

7. The development of Canada justified two transcontinental lines. It did not justify three. The Grand Trunk and Canadian Northern should have been amalgamated.

8. The Grand Trunk Pacific system has cost nearly \$200,000,000. The interest charges amount to over \$8,800,000 per annum. The net income last year was \$826,653. The liability of the Grand Trunk Company for interest amounts to over \$5,000,000 per annum at present, and will rise to over \$7,000,000 in 1923.

9. **We cannot recommend** that the Grand Trunk Company be unconditionally released from their liability. The responsibility for the National Transcontinental line rests mainly with the Government, but that for the Grand Trunk Pacific proper

belongs primarily to the Grand Trunk. The Government has voluntarily relieved the Grand Trunk of all responsibility for the National Transcontinental. In respect to the Grand Trunk Pacific proper the Government is fully entitled, morally as well as legally, to call upon the Grand Trunk Company to fulfil its contract.

10. The Grand Trunk Company proper has made unjustifiable charges to capital. Its lines have not been adequately maintained. More than \$21,000,000, which ought to have been spent on maintenance in past years, has not been spent. New capital expenditure of over \$30,000,000 is immediately required. The country is suffering from the company's inability to give adequate service. The Grand Trunk railway ought to be managed in Canada, and not from London.

11. **We recommend** that the control both of the Grand Trunk Pacific and of the Grand Trunk be assumed by the people of Canada on terms hereafter set out.

12. The Canadian Northern has been financed mainly by the issue of guaranteed securities. Till 1914 it met the interest from its own resources. Since that date the Government has assumed very heavy obligations on behalf of the company. There is little prospect that the company would be able in the near future to relieve the Government of these obligations.

13. The company's estimate of its future capital requirements is too low; and its estimates of probable growth of earnings have been and still are unduly sanguine.

14. **We estimate** that as a separate undertaking it would require fully \$70,000,000 of new capital within the next five years.

15. **We do not recommend** that further public aid be given to the Canadian Northern as at present constituted.

16. The Canadian Northern common stock represents no cash investment, and has no present value, either on the basis of the cost of reproduction of the property, or on the basis of its earning power.

17. **We recommend** that the public take control of the Canadian Northern Company on terms hereafter set out.

18. On the assumption that the people of Canada take control of the Grand Trunk, Grand Trunk Pacific, and Canadian Northern, we consider possible methods of management and operation.

19. **We do not consider** that operation by a Minister directly responsible to Parliament would be in the public interest. It would not secure better service or lower rates.

20. If the Government operated these three railways, it would be bound in fairness to the Canadian Pacific shareholders to take over their railway also. The Canadian Pacific gives good service and should not be interfered with.

21. Special objections to direct Government ownership and operation are:—

(1) That Canadian railways operate more than seven thousand miles of line subject to the foreign jurisdiction of the United States;

(2) That the Canadian Government resources are required for war purposes.

22. **We therefore reject** the idea of direct Government ownership and operation.

23. **We do not recommend** that the Grand Trunk, Grand Trunk Pacific and Canadian Northern Companies be allowed to go into the hands of a receiver.

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24. **We recommend** that the control of these three companies be transferred to a new body.

25. We have discussed and rejected the following suggestions:—

Transfer of all three railways to the Canadian Pacific.

Transfer of the Canadian Northern or a portion of it to the Canadian Pacific.

26. There is no possibility of forming a new commercial company to take over the three railways. Neither the Mexican precedent, under which the Government becomes a majority shareholder, nor the New York Subway precedent, under which the public authority shares the profits with the private shareholder, is applicable to this case.

27. Having come to the conclusion that direct ownership and operation by the Government is to be avoided, and that ownership and operation by a commercial company is not possible, **we recommend** that a new public authority, a Board of Trustees be incorporated by Act of Parliament as the "Dominion Railway Company"; and that the Canadian Northern, Grand Trunk and Grand Trunk Pacific be transferred to this body.

28. **We recommend** that the Government assume responsibility to the Dominion Railway Company for the interest on the existing securities of the transferred companies.

29. **We recommend** that the Intercolonial and National Transcontinental be also transferred to the Dominion Railway Company, for reasons which we give hereafter.

30. **We recommend** that the whole of the Dominion Railways be operated by the Trustees as one united system, on a commercial basis, under their own politically undisturbed management, on account of, and for the benefit of, the people of Canada.

31. **We recommend** that there be five Trustees, three railway members, one member selected on the ground of business and financial experience, and one as specially possessing the confidence of railway employees; that the original Trustees be named in the Act constituting the Board; and that their tenure of office be substantially the same as that of judges of the Supreme Court.

32. **We recommend** that the original Trustees retire after 3, 4, 5, 6, 7 years, respectively, according to a prescribed scheme; that they be eligible for reappointment; and that all appointments subsequent to the original statutory appointments be by the Governor General in Council on the nomination of the Trustees themselves.

33. We lay stress on the importance of the Board being non-political, permanent, and self-perpetuating; and in this connection point to the experience of the Australian State Railways.

34. We give reasons for concluding that railways are not a proper subject for direct Parliamentary control. We point to a general tendency in modern democracies to withdraw certain subjects from this control. And we show that under Parliamentary control the general interest of the whole community tends to be subordinated to the particular local and individual interests.

35. **We recommend** that the authority of the Railway Commission be extended to include the Dominion Railway Company's system.

36. We give the reasons for our recommendation that one of the Trustees shall be appointed on the ground of his possessing the confidence of the railway employees:

37. **We recommend** the transfer to the Trustees of the common stocks of the Canadian Northern, Grand Trunk and Grand Trunk Pacific subject to certain conditions and reservations made hereafter.

38. We deal with the question of the compensation to Canadian Northern shareholders. We find the charge that Messrs. Mackenzie and Mann have misappropriated public moneys unfounded. We find that the Canadian Northern shareholders possess a system of which the lines are well located and economically constructed, and that they have raised the necessary money with considerable financial skill and at moderate rates of interest, but that they erred in unwisely duplicating lines and reaching out into unremunerative territory.

39. **We recommend** that the question be considered whether Canadian Northern shareholders shall be permitted to retain a moderate proportion of the \$60,000,000 shares which they now hold; that the precise proportion, if any, and the relation of that proportion to their share of any future profits of the Dominion Railway Company, be fixed by arbitration.

40. **We recommend** that the entire share capital of the Grand Trunk, guaranteed, preference and ordinary, be surrendered to the Trustees in exchange for an annuity based on a moderate but substantial proportion of \$3,600,000, the average sum paid as dividend in the last ten years; and that this annuity should increase by 40 or 50 per cent after the first seven years.

41. **We recommend** that the precise figure be fixed by agreement and that it be left to the directors of the Grand Trunk Company (1) to apportion the annuity among the five classes of Grand Trunk shareholders, and (2) to procure such assents of their shareholders as are legally required to complete the transfer.

42. We give reasons for considering that this recommendation is generous to the Grand Trunk shareholders, and why the shareholders in their own interest will do well to accept it.

43. **We recommend** the transfer to the Trustees of the National Transcontinental, in order that it may take the place it was built to take as part of a great inter-ocean highway, and because its financial position would be hopeless if it terminated in a dead end at Winnipeg.

44. **We recommend** the transfer of the Intercolonial: (1) in the interest of the Maritime Provinces to whom the Intercolonial at present can only give a local service with no adequate terminals beyond Montreal; (2) in the interest of the taxpayer who has a right to demand efficient and economical expenditure of his money; (3) in the interest of the railway staff who will secure the wider opportunities of a great system.

45. **We recommend** that in future the Intercolonial be required to pay local taxes on the same basis as the other railways; and that the inhabitants on the line receive statutory protection against increase of local railway rates.

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46. **We make recommendations** as to (1) non-railway property of the transferred undertakings, (2) getting in minority holdings of shares and outstanding titles to land, (3) arrangement with the holders of Canadian Northern 5 per cent Convertible Income Debentures.

47. We deal with the legal position of the Trustees; and point out that the Canadian Northern, Grand Trunk and Grand Trunk Pacific Companies will continue to exist; and that consequently the rights of their security holders will remain undisturbed.

48. **We recommend** that the Trustees take over each railway as soon as the transfer can be effected, with the purpose of ultimately operating them all as a single unified system.

49. We deal with the finances of the Dominion Railway Company and point out that the Intercolonial, with no bonded indebtedness, has a considerable net revenue, and offers security on which new capital can be raised. We recommend the creation of a General and Refunding Mortgage of unlimited amount, to be issued as required.

50. **We recommend** that the Act of Parliament provide that the operation of the Company shall be on a commercial basis, and that the Trustees make no general reduction in rates until the property earns a reasonable net return.

51. **We recommend** that there be given to the Trustees the widest powers in the management of their property.

52. We have endeavoured to estimate the annual liability of the Government to meet interest unearned during the first few years of the new scheme, and we put it at about \$12,500,000 per annum. We think this amount should diminish steadily but not slowly; and that with proper economic and politically undisturbed management the attainment of a satisfactory financial result is only a question of time.

53. We give specimens of the large economies which should result from combined operation.

54. **We recommend** the enlargement of the functions of the Railway Commission; that it have jurisdiction over all Dominion Railways; and report to Parliament on all proposed grants of charters, subsidies, and guarantees.

55. We deal with the conflict of Dominion and Provincial jurisdiction. **We recommend** that, to prevent this in future, the Governor in Council should in certain cases disallow Provincial Acts, and that no railway company should operate under both Dominion and Provincial charters.

56. **We recommend** that there be a continuous public audit of the Dominion Railway accounts, and that full and comprehensive reports be made annually to Parliament.

57. **We recommend** the establishment of Railway Councils to bring together the railway management and representatives of public interests.

58. We point out that the existing railways are in excess of public requirements and show how much traffic is required to make a railway profitable.

59. We show that the cost of hauling grain to the station is sometimes as great as that of carriage from the station to Liverpool, and **recommend** that the question of highway improvements and motor haulage be taken into consideration.

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60. **We recommend** that future expenditures on the Hudson Bay Railway be reduced to the lowest possible amount.

61. We point out that railway rates are much more likely to rise than to fall in the immediate future.

62. And finally we **lay stress on the necessity for immediate action** lest Canada should suffer from railway congestion even worse than that of the past winter.

Respectfully submitted,

H. L. DRAYTON,

W. M. ACWORTH.

REPORT OF MR. A. H. SMITH.

This Commission was asked to report upon the general problem of transportation in Canada. Several subdivisions of the subject quite naturally suggested themselves, and were made a part of the problem to which the Commission was requested to give attention. Practically all of the subdivisions have received consideration, but the general problem is essentially a question of what to do with the railroads of Canada. To a constructive solution of this important problem, the Commission has given its attention.

The General Problem of Transportation in Canada:

For a proper understanding of the problem, a knowledge is necessary of the history of railway development in Canada, especially as affected by the public policy, which has found expression in governmental acts.

Canada early recognized that its growth depended upon the construction of railways. The large productive areas of the country could be served only in a limited way by its splendid system of waterways.

Even before the eastern provinces became united into the Dominion of Canada, the Grand Trunk had become an important railway line, serving the people both of Canada and the United States. The Intercolonial, as is well known, was constructed out of public funds, and largely for the purpose of bringing more closely together, commercially and politically, two more or less separated sections of the Dominion. Long in advance of its justification upon a commercial basis, an all-Canadian transcontinental line was projected by the Government and completed with extensive public aid by a private company as the Canadian Pacific.

Because of the great distances which separate parts of Canada's producing territories from the consumers' markets, development of the country's resources depended upon railway building, while cheap transportation was necessary to enable the people to compete with other producers. The people of Canada, therefore, gave such aid as was necessary to procure for themselves railway lines that would bring the country's resources into use and keep themselves in touch with the outer world.

Cheap transportation depends upon careful investment and efficient management. In the usual case, these are most likely to be found where private initiative and proper incentive to effort are employed. So far, Canada, for the most part, has pursued the policy of leaving to private enterprise the management of its transportation machinery. The Intercolonial, which has been under governmental control since its beginning, is an exception. But this line, I am informed, usually pays nothing to the Government as a return upon money invested in the property. On the contrary, it has frequently called upon the Government for aid in meeting expenses of operation. The investment in this line is large; some authorities placing it as high as \$348,000,000, including loss of interest. Evidently its rates are too low or its expenses are too high, but the use of this line, at the rates enforced, is regarded in some quarters as a right of the people in the Maritime Provinces. If the Canadian people

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have ever made an agreement, or adopted a policy which may be construed as creating that right, the contention may be correct; it is, at any rate, within the power of Government to grant such a privilege. The fact is referred to merely to point out in connection with what I shall say later that a railroad may be built either as a commercial enterprise and for ordinary commercial purposes, or as a public undertaking and for other purposes, which are within the proper scope of Government. The two should not be confused. But it should be kept in mind that when Government builds and operates a railway which does not pay its way, including proper maintenance and interest upon investment, taxation is relied upon to support transportation upon that line. The burden is shifted from the user to the general public, but the processes by which this is done are often so complex as to obscure the facts, and actual costs are not ascertainable.

The Canadian Pacific affords a later example of the internal development policy of the Government. That road had its beginning in a transcontinental project that was proposed to be carried out directly by the Government. At an early date, and it seems to me wisely, that purpose was altered; it was decided to have the road completed by a private company. But the undertaking was large, the population sparse, the prospect of profit remote, so that the Government not only turned over to the company the uncompleted road upon which it had expended a large sum, but it also extended to the company generous aid in the shape of land grants, cash subsidies, guarantees, and loans. It is true that value was given to the land grants largely through the building of the road and the opening of the territory to settlement. The important point here is that the Canadian Pacific owes its later and continued success not only to the skill and enterprise of its builders and managers, but to the fact that through liberal direct aid, it was able to begin business with a small charge against its earnings on account of borrowed capital. Thus favourably started, the company was able to devote its energies and surplus income to the development of the road and the country.

A new transportation problem arose with the settlement of the Prairie Provinces, where the land is devoted chiefly to raising grain and live stock. Owing to the long hauls that intervene between the producer and consuming markets, freight charges absorbed a considerable part of the proceeds. The Great Lakes afforded the least expensive route to the East and tidewater. But these lakes are open only part of the year, and navigation closes before the season's crops can be moved from the lake ports. With the filling up of the country and consequent increase in production, came a general demand for additional means of transportation. While land speculation probably had no little influence, the farmer felt the effect of inadequate facilities, and any project that promised relief appears to have found approval among citizens who were able, through their legislatures, to bring public aid to the development of these enterprises. Railroads, therefore, were not only actively in demand, but railroad builders were popular and had little or no difficulty in obtaining public support for proposed new lines.

The Canadian Pacific stood as an example of success to be repeated by newer railways. Unfortunately, too little attention appears to have been given to the underlying facts which actually made that road what it was. Experienced

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men apparently believed that a second Canadian Pacific might be had if they could but lay a transcontinental road, build great hotels, passenger terminals, and operate ocean steamers. These things were only the outward evidence and not the cause of the Canadian Pacific's prosperity. It may even be that they contributed little to the strength of that company's financial condition, if due account be taken of all the costs, investment as well as operating, involved in carrying on such enterprise.

In May, 1903, a Royal Commission of Transportation, of which Sir William Van Horne was chairman, was appointed "to consider questions affecting transportation of Canadian products to the markets of the world through and by Canadian ports, with a view of placing the Canadian producer in a position to compete, and compete successfully, through all Canadian ports with the producers and exporters of other countries." The report of this commission is interesting. It clearly reflects the effect of the outlook which great opportunities and a land boom had upon the minds of the people. All kinds of transportation projects were recommended. For instance, the Grand Trunk Pacific was to be extended to Moncton; the Intercolonial was to be extended to Georgian bay, etc. New canals were to be built, and old ones widened and deepened. This commission also recommended a bounty for Canadian-built ships, toll-exempt canals, additional waterways to be opened at public expense, and the acquisition of water terminal lands out of public funds. In other words, it was clearly the intent that transportation should be stimulated by subsidies from the public treasury.

It would now seem that there could not have been in sight enough traffic to justify the extensive development here recommended. However, many of the things proposed in this report have been done, and other ambitious schemes not here mentioned have since been brought out. The point in mind is that without making a specific declaration of the fact, as far as I know, Canada's policy for years appears to have been to promote the public welfare by means of building or aiding in the building of transportation lines throughout the Dominion.

It is unfortunate that Canada did not have a policy of regulation in this period which could have prevented needless duplication of lines and facilities. Competing lines have been built where effective regulation could have saved a large part of the investment, while completely satisfying every reasonable and proper need for service. Instead of co-ordination and conservation under government supervision, railways were permitted to duplicate plant in fields not yet productive enough to support the one; the Government, on the other hand, was, in one way or another, aiding both projects, if it had not indeed itself promoted either or both projects. Very naturally, it has not and could not have obtained the benefit which should have followed a correct programme of government aid. The policy of government aid makes the need for regulation of railway building more necessary even than where private capital is depended upon, for in the latter case the proposal must at least have a promise of commercial success before capital can be induced to come in and give it support. To the absence of such regulation must be charged responsibility for no small part of the railway problem of to-day.

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We may well inquire here as to the effect of this policy upon the three principal systems. The Grand Trunk Railway Company, feeling no doubt that its own traffic field had been invaded by the government-aided Canadian Pacific, desired in turn to enter the promising western territory. Accordingly, it proposed to build a line from North Bay to the Pacific coast. Public aid was required and granted in a way to ensure the building of the road. If any serious thought was given to co-ordinating existing or proposed roads, and to utilizing them for the public good, it did not find public expression in any constructive way. The Grand Trunk Railway Company evidently felt confident in the success of its plans, for it pledged its own credit in aid of the extension, and entered into contracts which it now finds quite beyond its ability to carry out.

Canadian Northern interests, directed by Mackenzie, Mann & Co., who since an early date had been operating local lines in Manitoba, seized the opportunity afforded them for expansion and rapidly extended their rails throughout the Prairie region. The records show that the Canadian Northern had a large mileage on the prairies before the projection of the Grand Trunk Pacific; so that when the extension plans of the Grand Trunk became a part of the national policy, as they did become, the Canadian Northern was added to the number of those who wanted to own a transcontinental system and one as fully complete and self-contained as was that of the Canadian Pacific. Hence, we find two new companies, both built largely upon public credit, striving for first place in a field which, as for transcontinental transportation, or even as for connecting Eastern and Western Canada, was largely occupied. Besides having the Great Lakes waterway there could have been barely enough business to support one additional line, and that only by the exercise of economy in operation and prudence in investment.

The Canadian Pacific, enjoying splendid credit, with adequate powers and resources, and keenly alive to the possibilities of losing business to competitors challenging its supremacy everywhere, then entered the contest by undertaking to build new lines in an effort to protect its sources of revenues.

The stimulation felt throughout the country by the influx of settlers and by the importation of so much new capital not only created a boom, but it quite naturally affected prices for labour and materials, sending these soaring; the increased prices in turn contributed largely to the higher costs which are now reflected in the construction accounts of the new roads.

This brings us fairly to a recognition of the fact that while the policy of public aid to railways had originally been founded on the urgent need for transportation to open up a new country, to develop its resources, and to unify Canada commercially and politically, it was carried far beyond the limits warranted by the original exigency. It appears to me that the responsibility is as much the Government's as the private companies'. Without enabling legislation and the extension of Government credit from which all received their essential support, the companies could not have expanded and overbuilt.

This policy, in so far as it aimed at the development of Canada, appeals to me as sound, and fully justified in its inception, but it needed to be supplemented by some form of supervision that would have insured to the people the benefits of that policy without the losses that have followed the effort to assist development indiscriminately.

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The situation must be faced as it exists. It is not possible to undo what has been done; the money which has been spent cannot be recalled. The immediate and obvious thing to do is to adopt a constructive and discriminating programme, first, for correcting the conditions which necessitate continuing loss and waste, even where that would require the abandonment of useless property, and, second, for controlling new construction. The scrap heap is frequently the most economical disposition available for inefficient plant and machinery.

Status and Usefulness of the Three Transcontinental Railway Systems.

The Canadian Pacific Railway System;

The Grand Trunk Railway System (including the Grand Trunk Railway, the Grand Trunk Pacific Railway and their several branches);

The Canadian Northern Railway System.

The Canadian Pacific Railway is essentially self-contained and self-sustaining. I agree with my colleagues as to its financially strong position. It has world-wide commercial strength. As a result of the aid and privileges extended by Government, together with the prudence and progressiveness of its management, which has extended its field of activity over nearly all Canada, and through its steamship lines and commercial organizations throughout a large part of the world, it is a success.

The Canadian Pacific is well built, well maintained and has adequate terminals and equipment. It is efficiently operated. It is somewhat at a disadvantage in crossing the mountains, and elsewhere it has gradients that, compared with more recently built lines, do not make for as good trainload and operating efficiency. It is assumed that the Canadian Pacific will make improvements as the need for them arises, for it is fully able to do so.

Accorded reasonable treatment, that company will continue, I am sure, to give good service, and I believe the best interests of Canada will be served by continuing the present status of the Canadian Pacific. The introduction of Government railway competition, which might have no regard for investment or cost of operation, would be unfair and, in the end, would react disastrously upon the Canadian people. The regulating power affords to the people of Canada adequate protection in the matter of rates and services, and such power should likewise protect the company.

THE GRAND TRUNK SYSTEM.

The fortunes of the Grand Trunk Railway Company are bound up with the Grand Trunk Pacific. It stands as guarantor for large sums of money invested in the railway, and has advanced millions from its own resources in an effort to develop the western line and its subsidiary properties. The Grand Trunk Pacific Development Company has absorbed many millions of Grand Trunk capital without definite prospect of return, and to the Grand Trunk Pacific Branch Lines Company large construction advances have been made. Not only is the Grand Trunk committed for many millions, but the Government has directly invested large sums of money in this property and guarantees other large sums, the total of which exceeds \$127,000,000.

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The Grand Trunk Pacific was located on a scale that would do credit to any single track line. There is not enough business to justify such an outlay, and the prospect for business which will warrant the cost seems quite remote. For long distances, sections of this line parallel one or more other lines.

That part of the Grand Trunk Pacific lying between the Rocky mountains and the Pacific coast is in a country which appears to have abundant natural resources. In time, these may be developed to the advantage of this road.

The port of Prince Rupert is suited for a large ocean traffic, which is non-existent. The development of Alaskan trade seems to present the most immediate possibility for this port and railway.

The road west of Winnipeg has some disadvantages on account of expensive trestles and instability of embankments. It has good grades, but inadequate terminals at important places. It has sufficient equipment but lacks feeders.

From the Rocky mountains to Winnipeg, the presence of parallel roads raises a question as to whether the Grand Trunk Pacific line is not the best adapted by location and physical condition to handle the trunk-line traffic. If it is not the best, then the disposition of this part of the road, with its branches, naturally depends upon its usefulness as a road serving local interests.

From Winnipeg east to North Bay and Port Arthur, the Transcontinental and Grand Trunk Pacific railroads together can give efficient service as a connecting link between the railways of Eastern and Western Canada. This road also affords a good line for traffic moving via the Great Lakes. In fact, it is probably the best route of any for hauling bulk commodities at low costs.

Officers of the Grand Trunk Railway Company claim that the Government is morally bound to relieve the company of the Grand Trunk Pacific, because the Government is responsible for the failure of the project, having permitted a rival company to enter the field. The rival line, however, has been constructed at a lower cost per mile, and manages to get enough traffic to pay its operating expenses and a large part of its fixed charges, which cannot be said of the Grand Trunk's system west of North Bay. I feel that I am not called upon to discuss the merits of the Grand Trunk's claim against the Government. I have no doubt the Government has observed at least the letter of its contract.

Standing alone, with efficient operating conditions imposed, there is no reason, within my knowledge, why the Grand Trunk Railway proper should not become a profitable operation. It occupies a good territory, reaching some of the best traffic centres in the United States and Canada, and has American connections that ought to contribute to its welfare. The company needs terminal improvements in cities and modern equipment, especially locomotives. The need for equipment is pressing, and should be met.

THE CANADIAN NORTHERN SYSTEM.

The lines of the Canadian Northern, particularly in the Prairie Provinces, appear to be advantageously located in view of traffic conditions. Inspection of the property brings out the fact that this road was built with proper regard for economy, and the creation of a permanent public service utility.

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In some instances, the system has extended its lines where it should have obtained a traffic interchange agreement or the joint use of facilities instead, at least until the traffic had grown enough to justify further expansion. A public policy intended to develop and serve the country as a whole, at the lowest cost, would have enforced arrangements which would have obviated the needless duplication of facilities.

The line from Yellowhead pass to Vancouver, in part at least, may be unnecessary, but it is there by the joint action of Government and the company. The character and capacity of this line through the Fraser River canyon, where it is alongside the Canadian Pacific for about 200 miles, would suggest that no more money should be spent for double-tracking or revising grades on either of the railroads for years to come. From Yellowhead pass to Edmonton, the proximity of the Grand Trunk Pacific places two lines where one affords abundant capacity.

The invasion of the East by the Canadian Northern now appears to have been unwise, but condemnation thereof must be tempered with a knowledge of the conditions which forced this extension. There was a public demand for railroads. All Canada was enthusiastic over the prospects of a rapid growth in wealth and population. Railroads were on a competitive basis, and the public stood ready to back any new railroad enterprise, since that meant a rival carrier, and, incidentally, a new business in construction. There was no regulation which enforced co-operation among rival lines. The Canadian Northern, seeking to expand and become a profit earner, quite naturally desired to get all the traffic it could, and to hold all it got for as long a haul as possible. As a result, it undertook to do what appeared to be necessary under the conditions then existing—that is, to extend its line to both oceans.

An inspection of this company's property shows that generally it is of a type of construction well suited to its needs, and that the builders have installed it at a cost which, by comparison, seems small. Nowhere was there evidence of waste in the construction work itself. It is true that the company had some construction under way, or planned, that appeared wasteful because unnecessary, but this was due, I understand, to the unregulated competitive system, or to bargains with public authorities.

This building of expensive terminals in cities already supplied with adequate facilities affords an example of duplication for which the public must eventually pay. However, in the absence of restraint and regulation by consistent public authority, it is difficult to determine how the company could have avoided this.

The precarious financial situation of the Canadian Northern is due, in part, to its uncompleted condition, and to the fact that needed capital cannot be obtained on its own resources, especially during the period when capital is so greatly in demand by powerful governments. This system is not at present able to earn all of its fixed charges. As important parts of the system have but recently emerged from the construction period, it would be truly remarkable if it were able to do so. It does earn a very large proportion of such charges, and probably could earn all of them but for the burden of eastern extensions and duplications that have been placed upon it. Practically all commercial enterprises, and particularly railroads, must go through a development period.

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The Canadian Northern is short of equipment. With the return to normal conditions, and provided with the capital necessary for equipment and for additional local facilities, this road can, in my judgment, work its way out in a reasonable time.

Reorganization.

We are asked to make suggestions in regard to "the reorganization of any of the said railway systems or the acquisition thereof by the State; and in the latter case, the most effective system of operation, whether in conjunction with the Intercolonial Railway or otherwise."

The first practical question is, therefore, the need of reorganization of any of these three transcontinental systems; the second is whether they should be acquired by the State; and the third is whether the status of the Intercolonial can be changed; and, if so, can the road be advantageously grouped with either of the three systems.

In such suggestions as I shall make, I am influenced by consideration of the public policy as evidenced by past governmental acts. I further assume that the existence of these roads through the direct aid and sanction of Government is conclusive evidence of the fact that the people really desire them. That they were built in advance of their need for ordinary commercial uses—a fact which is emphasized by the present abnormal economic situation—does not appear to me a sufficient reason for condemning the policy of national development, or the wisdom and integrity of those who have built the roads under that policy. Neither do I think that there exists any condition to warrant taking up a new and untried public policy, which may lead to greater difficulties than those which are now faced.

The history and standing of the Canadian Pacific Railway, and its public service as a carrier to-day, is sufficient assurance that it does not need reorganization. The scope of its business, extending to other lands by steamships and commercial connections, and the control of many thousand miles of railroads in the United States, would afford sufficient reasons, if none other existed, for dismissing the idea of its acquisition by the State.

So much of the Intercolonial as is serviceable to the Canadian Pacific appears to be now used by it, either as a local connection or through trackage rights. Moreover, the two have existed separately for many years as competitors and no new reason appears why the relations of the Intercolonial and Canadian Pacific should be changed for the future, unless the people of Canada are satisfied that better results would be obtained for the territory served by the Intercolonial if it were in the hands of the Canadian Pacific.

The Grand Trunk Railway Company has stated that it is beyond its power to assume and carry the obligations which would be imposed upon it if it should try to become such a transcontinental system as the plans of 1903 contemplated. The company has not attempted to bring about the organization of a system approximating that of the Canadian Pacific or even the Canadian Northern, nor can it do so.

In view of the parent company's inability to carry out its original plans, and to discharge its obligation, the question is, what disposition is to be made of the various roads which were intended to be, but did not become part of one operating system.

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My colleagues have recommended that the stockholders of the Grand Trunk Railway Company be paid an annuity which is to be a "moderate but substantial portion of \$3,600,000, the average dividend payment for the last ten years." This recommendation is in spite of the facts noted in the report that there are arrears in maintenance which require the expenditure of twenty-one millions of dollars, and that the company has charged to capital items which should properly have been charged against income, these facts indicating that there have been some dividends paid which have not been earned. Considering this situation and also the obligation of the company in the West, I am not impressed with the justice of paying an annuity to the stockholders in exchange for a surrender of this property. I also would be liberal to them, but I would allow them to keep their property and give them a chance to work out their own salvation. To that end, I would recommend that a settlement be effected between the Government and the Grand Trunk Railway Company. The railway cannot carry out its part of the contracts, and it should be relieved of further embarrassment. On the other hand, the stockholders of the Grand Trunk Railway should be required to curtail or forego their dividends for the present, and the entire earnings be applied to the rehabilitation of the road through a term of years. The Government thus gives up a present claim which the debtor cannot pay anyway; in turn, it will enjoy improved and extended service which may be worth far more to the welfare of the people. I should also give the Government some claim upon the future earnings of the Grand Trunk, so that it may share in any future prosperity which this action makes possible.

Reorganization of the Grand Trunk is desirable only in so far as it shall be required to put itself in shape to discharge efficiently its functions as a carrier. Whether it shall retain all of the subsidiaries which it has accumulated through the past fifty years depends in large measure on what they can contribute to the main property. Careful study of each of the subsidiaries will lead to definite conclusions from the standpoint of the Grand Trunk and its future welfare.

What the Grand Trunk needs most of all is to be relieved upon equitable terms of the embarrassment that it has incurred through the failure of the transcontinental scheme. The acquisition by the State of the Grand Trunk Railway proper presents much of the embarrassment that would obtain in the effort to acquire the Canadian Pacific, for here also, in addition to the question of equity involved, there is the problem of some two thousand miles of railroad owned in the United States; and the fact that the Grand Trunk's principal seaport is in the United States.

The investigation of the Canadian Northern by the Commission has disclosed evidence of skill in construction and efficiency in management, considering the means and equipment available. The company even now earns a large part of its fixed charges although important parts of the system have been in operation for but a year. I think there is ample justification for confidence that the affairs of the company will improve with the return of normal conditions. I see no reason for a change of management or a reorganization, excepting as hereinafter suggested.

It may be well here to consider the relation of the Intercolonial to the other roads, and the possibility of operating it in conjunction with any of them. I have shown its relation to the Canadian Pacific. The main line of the Intercolonial is about

1,000 miles, from Montreal to Halifax. It has occupied the territory for fifty years and has become adapted to it. There are apparently no operating economies available by combining it with another system that are not available to it alone. Assuming proper regulation, there appears to be no traffic interchange that could be better assured by merger. I am informed that the Maritime Provinces consider the use of the Intercolonial as a right to which they are entitled. Moreover, the Government has built the Transcontinental, a part of which was in compliance with plans of the Grand Trunk, while the rest of it is so placed that it ought to continue to be operated in conjunction with the Intercolonial. The present status of the Intercolonial and the eastern part of the Transcontinental should be continued as a government operation. The results of such operation should, however, be reported to the people of Canada in exactly the same form as is required from other railroads. And these roads should be subject to the same reasonable regulation as is exercised over all other railroads.

Mention might be made here of the railroad that the Government is building from the Saskatchewan river to Hudson bay. The object in the construction of this road has been stated to be that of obtaining a shorter haul from the western provinces to Europe. The bulk of the traffic to follow this route must necessarily be diverted from the roads extending from Winnipeg to the East, so that the project seems to be an instance of competitive construction which cannot be justified in this case, even on the ground that it opens up new territory.

There are numerous local railway projects, within provincial limits, which at the moment seem to have little effect upon this general railroad problem. Disposition of these may well await developments as to their necessity and utility when they assume operation. There is little that can be said just now as to their probable relation to the existing means of transportation.

The Great Lakes and the St. Lawrence route furnish a natural route from the western country to the East, and to the Atlantic ocean for a part of the year. Numerous steamship lines between Port Arthur and Georgian Bay or the lower lakes and St. Lawrence river ports afford adequate transportation under normal conditions, though somewhat affected by customs requirements and other factors. In view of the heavy movement of grain in the last three months of navigation, regulations governing shipping should be as favourable as practicable, for the hauling of grain over the long distances to the eastern seaboard by an all-rail route involves a problem in car supply and cost which renders such a haul unprofitable for rail lines.

The success of the Canadian Pacific steamship lines has led to the suggestion by some that the other railroads ought also to establish steamship lines. I do not believe that this success was primarily due to the railroad ownership of the ships. Temporarily the war seems to have put a stop to plans for railroad-owned steamships. If, at the close of the war, it is to be tried again, it would seem advisable first to ascertain whether other ships cannot be induced to schedule sailings before railroads incur the responsibility of making additional investment in ships. There are ships running in regular postal routes with subventions. Perhaps the Government might well require, in connection with its subventions, that ships give equal service to the railroads without discrimination among them, thus removing another cause for the employment of duplicate facilities.

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In visiting the various ports, I was impressed with the facilities installed and being installed. At Halifax, particularly, important works were actively under way, necessitated, I believe, by the overseas traffic for war purposes. It is likely that the future development of steamship terminals in connection with railroads will be difficult to fix until normal conditions resume. Meanwhile, the Atlantic seaports are so much involved in the emergencies of war as to place them beyond the scope of this inquiry. In any event, such works of harbour improvement and development as are the result of war measures will be there at the close of the war as a foundation for what the future may hold.

I am unable to join my colleagues in their recommendations. They propose that practically all of the railways in Canada, except the Canadian Pacific and the American lines shall be turned over to a corporation to be managed by a board of trustees appointed by Government. They insist that this board is to be permanent and self-perpetuating. I do not know by what means one Parliament can bind its successors to a given policy, especially in so simple a matter as changing the organization of a government board. My friends seem to avoid government ownership and operation, in fact condemn it as inadvisable, but propose a plan which contains so many elements of danger in the direction which is sought to be avoided that I am unable to join them.

Their plan would add about a billion dollars to the direct debt of Canada. The interest on this is about forty millions, adding very largely to government expenses. Judging from the experience Canada has had with its government railways, it is fair to assume that this would remain a permanent burden. Operated by private companies, this interest would ultimately be borne by the companies without recourse to the government funds, and at the same cost of service to railway patrons as would obtain under government operation.

Their plan also leaves out some of the railways. This is unfair to the investors whose property is to be subjected to government competition. It also discriminates in the method by which the respective properties are to be acquired. I cannot approve the proposed centralization of control. There are problems local to separate regions which often require prompt action and co-operation between the railroads and the people served. There is a need everywhere for that prompt and efficient service which can come only from a knowledge of local conditions and responsibility for meeting them. I cannot believe that centralization, remote responsibility and control, will ensure good service to the people of Canada.

The recommendation creates a Dominion Railways Company owned by the Dominion Government, to take over those roads. There are about 7,000 miles in the United States controlled by Canadian companies. The Canadian railways depend for no inconsiderable portion of their revenue on United States traffic. A fundamental defect of the plan, therefore, is in placing the Government in the railroad business, not only in Canada, but also in operating railroads in the United States subject to both federal and state regulation.

Through private railway management, Canada has obtained about one mile of railroad for each \$30,000 of Government aid of guarantees, which is but a fraction of the cost of Government railroad undertakings. In some instances, a large proportion

of the aid was in land, the value of which produced by the building of the railroad and the settlement thereby made possible. Compared with the total outlay involved in producing railroads by the Government itself, as, for instance, the case of the Intercolonial or the Transcontinental, from three to six times that amount have been used to realize equal results. This shows distinctly the value of enlisting and retaining private enterprise.

The Obvious Remedy.

Let us review the salient facts concerning each company:

The Canadian Pacific is amply able to take care of itself. It can and does provide competition with the other railroads. In order to be most serviceable to Canada, it should be continued, subject only to such equitable regulation as is accorded to all lines.

The Grand Trunk succeeded in the East and failed in the West. The Canadian Northern succeeded in the West and was jeopardized by its eastern expansion.

There is extensive duplication of lines in the West; the unsuccessful Grand Trunk Pacific lines are found among the successful Canadian Northern lines. Public policy demands the unification of these lines, for great economies could be thereby accomplished.

There is extensive duplication in the East; the new Canadian Northern lines among the older lines of the Grand Trunk proper. Great economies in proposed investment and operating expenses await the joint working of these properties.

There is wasteful duplication in the connecting region between North Bay and Winnipeg, where the Canadian Northern line parallels the government line. Economy awaits the joint working of these lines.

Consideration of all phases of the problem leads me to recommend the following remedies for the existing situation:—

Let the Canadian Pacific alone; let the Grand Trunk operate the eastern lines now held by that company and the Canadian Northern; let the Canadian Northern operate the western lines, now held by that company and the Grand Trunk Pacific system; let the Government operate the connections or procure their operation by private companies; all of which should be done under arrangement that are equitable and yet look to the not distant day when the country will have survived the war and resumed its prosperous growth.

There may be several ways by which this can be brought about, but the one that has appealed to me is that which seems to be the least disturbing of values and credit and involves no untried schemes or protracted disputes. Therefore, I beg to make the following suggestions:—

1. Amend the regulating policy so that the Railway Commission may have jurisdiction over all railroads in the matter of maximum and minimum rates, the issuance of securities, the building of new railways, or the extension of lines, and other matters properly within the scope of governmental supervision.

2. Create a board of trustees, consisting of two government officials and three private citizens to act for the Government in the matters hereinafter proposed.

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3. Relieve the Grand Trunk Railway Company of its obligation to lease the Transcontinental, and require the company to relinquish all claims upon the Transcontinental; require it to lease to the Board of Trustees the Grand Trunk Pacific railroad properties at a rental amounting to the net annual fixed charges; require it also to take under lease the Canadian Northern properties east of North Bay and Parry Sound, and pay as a rental the net fixed charges on those properties. The time of the lease should be for twenty-one years. The Grand Trunk's investments, other than railroad, in the West may be disposed of by the company as it may elect, and in accordance with its best interests.

4. Require the Canadian Northern Railway Company to confine its operation to the field west of Winnipeg. Relieve it of the line east of Winnipeg by leasing for twenty-one years to the governmental Board of Trustees, at a rental of the net annual fixed charges. Require it to take a lease of, and to operate for the same period the Grand Trunk Pacific Railway, and its branch lines, paying as rental the net annual fixed charges upon those properties; except that until seven years after the end of the war they shall have the immunity that was promised the Grand Trunk Pacific for a period of seven years after construction, and that they shall not be required to assume any of the extraneous investments of the Grand Trunk System in the West.

5. Lease the lines between North Bay and Winnipeg (except the Canadian Pacific's) for a term of twenty-one years to either the Canadian Northern or the Grand Trunk (or, in event neither applies, to any other qualified company), requiring the lessee to furnish the necessary capital for new equipment, and to maintain and operate the lines on the best terms that can be made; terms that would give the best service needed at lowest cost to the Government being regarded as best. Either the Government or the lessee should build a connecting line of about thirty miles near Long lake, Ontario, to protect the better working of the two lines.

6. The Government and companies should have the option of terminating, after ten years, any of the leases upon equitable terms.

The foregoing recommendations are made with a view to obtaining for Canada a maximum of efficiency at a minimum outlay. The continuance of government aid, to some of the railroads at least, will be necessary under any plan. The plan herein proposed seeks to reduce this to the lowest possible point and to centralize it upon those parts of the existing lines which are not self-supporting, and which, in the nature of things, cannot be self-supporting for years. These connecting links, "bridges," as they have been called, exist, it seems to me, as a result of that public policy which has been discussed at some length. The Government may well afford to take them over and maintain them as necessary parts of the public investment in the country's development. They are not of sufficient importance to bring about those dangers inherent in government operation of this kind on a large scale, and holding them will not endanger private enterprise. It may be necessary in working out this plan to grant some additional and temporary aid to the Canadian Northern, and it will be necessary to effect some compromise with the Grand Trunk Railway Company

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which will enable this Company to continue. Aid should be extended upon the recommendation of the Board of Trustees, who should be charged with the duty of investigating the need of and approving the aid to be rendered by the Government; they should also see that the Government receives for that aid such security as will give it a revision in case of default.

The recommendations here submitted are to be considered as a general outline of what appears to be a fair solution of the transportation problem. Enabling legislation will be required in any case, and I realize that there are many technical and legal questions which will require careful attention at expert hands. If the general plan is adopted, my thought is that the Board of Trustees which I have suggested be charged with the duty of acting for the Government in all matters requiring new contracts, and shall protect the interest of the Government in every way while leasing, operating, or financing the property under their care to the best advantage, due consideration being given to the rights of the other parties at interest.

If for any reason it should prove inexpedient to carry out the foregoing suggestions, and if the Government should find it wise or necessary to possess itself of, and to hold any considerable part of the railway properties, I should recommend as an alternative plan the formation of a private company to take over other operations of those properties, either as a whole or in groups. Even where a road does not earn its fixed charges the Government could profit in the long run by making the terms of an operating lease sufficiently attractive to induce private enterprise to undertake its management. The terms of the contracts would naturally depend upon the extent of the property and the prospect of earnings, but they could be so drawn as to prove attractive to private capital and at the same time relieve the Government of the expense and embarrassment of government operation. Such contracts might be based upon a profit-sharing plan on a fair basis, which would leave the company a hope of reward commensurate with its efforts and give the public also a share in the prosperity which they must help to create.

I should like to add one other thought. The railways of Canada are in desperate need of equipment. Whatever decision is made with reference to the railways, the transportation problem is now acute in so far as equipment is concerned. I would, therefore, recommend that the Government undertake at once to provide an ample supply of freight cars and locomotives against immediate and imperative needs. These cars and engines may be had, if desired, under trust agreements. It will be a simple matter to turn these cars and engines over to the operating companies under lease, or contract of purchase which may be exercised when conditions are more nearly normal.

Concluding, I would be loathe to suggest recourse to any radical changes in the domestic policy of the Dominion of Canada in this time of war and stress. Remedial measures are often more efficacious than revolutionary ones, and more equitable. I have been impressed by the seriousness of your transportation problem, and in sincerity express my belief that the problem can be successfully and satisfactorily remedied by a just and mutual recognition of difficulties and full and free co-operation between the Government and the railroads. Fair and broad treatment of the question will, I am convinced, bring capital and personal genius commensurate with the

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exigencies of the present situation, and capable of developing a happy solution. I believe that the best results hitherto have been obtained by the efficiency and economy of private initiative, energy, and capital. It is no longer assumed that the self-interest of the railroad investor and operator is antagonistic to the interest of the public; rather, we have all learned, governments and corporations alike, that the two are inseparably linked and must stand or fall together. Upon these fundamental truths I base my firm conviction that the brightest outlook for the future of your great Dominion can be assured through the extension of private railroad enterprises. The hope of honour and the reward of public approval must be open to human kind to get the best results from human endeavour.

Facing the urgency of the need, considering the part which the Government has taken and the responsibility which it shares, and keenly alive to the magnitude and the importance of the tasks now placed upon the railroads and the greater tasks which they will face, I see no safe alternative but that the Government shall continue, with discrimination and resort to all available safeguards, and under a policy of proper regulation and co-ordination of effort, to aid the necessitous railroads of the Dominion until such time, which I hope and believe will not be far distant, when these will become self-supporting and the problem will be solved.

Respectfully submitted,

A. H. SMITH.

NEW YORK, April 25, 1917.

A. PENDIX A.

Report on Appraisal of the Canadian Northern Railway System
and the Grand Trunk Pacific Railway.

BY

GEO. F. SWAIN, M.Am.Soc.C.E., M.Can.Soc.C.E., M.Inst.C.E.

OTTAWA, Ont., March 10, 1917.

*To the Commission of Inquiry into Railways and Transportation.**Mr. A. H. Smith, Chairman.*

GENTLEMEN,—I beg leave to submit the following report with reference to the work that has been done under my direction in making an approximate valuation of certain railroad properties in Canada.

My first invitation to attempt this work was contained in a letter from Mr. Smith, dated August 3, 1916. I proceeded at once to New York and consulted with Mr. Smith, then to Ottawa where I consulted with Sir Henry Drayton, and arranged for the organization and prosecution of the work.

ORGANIZATION.

My first problem was to secure a competent man to represent me at Ottawa, where the office work necessarily had to be done, and to take charge of the office. I at once entered into correspondence with Mr. W. H. Chadbourn, who had assisted me previously in similar work in valuation of large railroad properties, as well as in other matters, and on September 2, 1916, Mr. Smith telegraphed me approving his appointment. Mr. Chadbourn's previous experience had been as follows: 1886, graduated from the Massachusetts Institute of Technology; 1887, Assistant Engineer, Norfolk and Western Railway; 1888, Chief Engineer, Wilmington and Conway Railway, now a branch of the Atlantic Coast Line, and Chief Engineer of the Wilmington Sea Coast Railway, now a part of the trolley system of Wilmington, N.C. He built both of these lines by force account; 1890-1906, he was with the United States Engineer Corps on River and Harbour Works, occupying positions of great responsibility in the design of the works on the Ohio river, and elsewhere; 1906-10, Chief Engineer, Chicago Great Western Railway.

Since 1910 he has been very largely engaged in valuation work, as follows: 1911-12, assisted me in valuation of New York Central Lines east of Buffalo; 1911-12, assisted Mr. W. J. Wilgus in valuation of the Lehigh Valley Railroad; 1912, assisted Mr. J. R. Kendrick in valuation of a portion of the Canadian Pacific Railway between Montreal and Toronto, the valuation being made for the company; 1913-14, in charge of the valuation of the Atlantic Coast Line for J. G. White Engineering Corporation.

In 1915 Mr. Chadbourn went to Russia for the J. G. White Engineering Corporation on professional work. While in Europe he was a member of the Commission of Relief in Belgium. He returned to this country early in 1916.

My communication with Mr. Chadbourn was largely by wire, but I had two conferences with him, in which we outlined the methods of conducting the work.

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Mr. Chadbourn proceeded at once to Ottawa, where he arrived September 6, and immediately entered upon the work. He was assigned offices at first in the Royal Bank building, and later in the *Citizen* building.

In conference with Mr. Smith and Sir Henry Drayton, the question of organizing an engineering force was thoroughly considered. It would have been comparatively easy to have secured engineers from the United States who had had experience in valuation work and were familiar with the principles, points of view, and methods governing such work. In Canada, little valuation work had been done, and that largely by American engineers. The Canadian Pacific Railway a few years ago had had a valuation made of a part of its line, and had placed the work in charge of Mr. J. R. Kendrick, of Chicago. Mr. Kendrick's force of engineers, of whom Mr. Chadbourn was one, was composed entirely of engineers from the United States. Moreover, owing to the war, there was a scarcity of engineers in Canada properly equipped with the technical knowledge requisite for this work. Nevertheless, it was decided, in view of the fact that this work was to be done for the Canadian Government, that, with the exception of Mr. Chadbourn, the engineering staff should be made up entirely of Canadians, if properly equipped men could be found. It was absolutely necessary that I should have somebody to represent me in Ottawa who was personally known to me, and on whose judgment and discretion I could thoroughly rely. Mr. Chadbourn more than fulfilled these conditions, and with him in charge of the office, I felt that the field work and office work should be done, if possible, by men familiar with and having had experience on the properties which were to be valued.

To select and organize a suitable force caused some delay, in view of the circumstances above referred to, but ultimately a very satisfactory organization was effected. None of the men whom we were able to secure, however, had had any experience in valuation work, and they had to be instructed and trained in it. I am very happy to state, however, that they entered upon the work with interest and enthusiasm, and that, as a rule, they grasped very quickly such principles of valuation as it was necessary for them to apply. To all these engineers my thanks are due for their earnest and conscientious labours. The work in the field was, in some instances, arduous, requiring long hours, and exposure to severe weather conditions, but it has been done with credit and with remarkable speed.

The following list gives the names and character of the work performed by the various engineers who have been connected with the work, together with other office employees:—

LIST OF ENGINEERING EMPLOYEES.

- (1) W. H. Chadbourn, M. Am. Soc. C.E., Chief Engineer. In charge of office.
- (2) C. S. Gzowski, M. Can. Soc. C.E. In charge of field examination of Canadian Northern line between Edmonton and Vancouver, including terminals at Edmonton and Vancouver; lines on Vancouver island; of line from Edmonton to Calgary, with branches; and of other branches out of Edmonton; also of the Grand Trunk Pacific from Edmonton west; also preparation of final report in the office on Canadian Northern lines above named. Assisting Mr. Gzowski in this work, were: G. H. Burnett and J. W. Chappelle, in the field and office; and L. Phillips in the office.
- (3) G. R. Balloch, M. Can. Soc. C.E. In charge of field examination of Canadian Northern lines between Port Arthur and Edmonton, including main line and branches; also preparation of final report on these lines in the office. Assisting Mr. Balloch in this work were: H. MacNeil in the field and office, and F. O'Gara, L. J. M. Howard, and J. Rainboth, in the office.
- (4) A. H. N. Bruce, M. Can. Soc. C.E. In charge of field examination of Canadian Northern branches between Ottawa and Toronto, and main line Toronto to Capreol, also preparation of final report on these lines in the office.

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- (5) T. S. Armstrong, M. Can. Soc. C.E. In charge of field examination of Canadian Northern lines between Ottawa and Port Arthur via Capreol, and preparation of final report on this line in the office.
- (6) W. H. McGaan, A.M., Can. Soc. C.E. In charge of field examination of Canadian Northern lines and branches east of Ottawa and Toronto, and preparation of report on these lines in the office. Assisting Mr. McGaan in this work, was: W. B. Elder.
- (7) N. Cauchon, A.M., Can. Soc. C.E. Specially assigned to valuation of real estate at terminals, including Montreal, Ottawa, Toronto, Port Arthur, and Winnipeg.
- (8) H. Horner, Architect. In charge of making valuation of buildings of all kinds.
- (9) B. M. Hill. In charge of field examination of the Grand Trunk Pacific line between Winnipeg and Edmonton, including branches; and preparation of report on these lines in the office.
- (10) A. L. Ford, M. Can. Soc. C.E. In charge of preparation of report in the office on Grand Trunk Pacific line between Edmonton and Prince Rupert. Assisting Messrs. Hill and Ford in this work, in the office was: C. Gilmore.
- (11) E. C. Keefer, A.M., Can. Soc. C.E. General office assistant, engaged in working up final reports, making estimates from profiles, etc.
- (12) H. MacNeil, A.M., Can. Soc. C.E. Assisting Mr. Balloch in the field and office.
- (13) F. C. O'Gara, A.M., Can. Soc. C.E. Assisting Mr. Balloch in the office.
- (14) L. J. M. Howard, Assisting Mr. Balloch in the office.
- (15) J. Rainboth, A.M., Can. Soc. C.E. Assisting Mr. Balloch in the office.
- (16) G. H. Burnett, A.M., Can. Soc. C.E. Assisting Mr. Gzowski in the field and office.
- (17) J. W. Chappelle. Assisting Mr. Gzowski in the field and office.
- (18) L. Phillips. Assisting Mr. Gzowski in the office.
- (19) W. B. Elder. Assisting Mr. McGaan in the office.
- (20) C. Gilmore. Assisting Messrs. Hill and Ford in the office.
- (21) C. H. Larkin. Engaged in estimate of areas and values of right of way.
- (22) A. M. Beale. Mr. Beale was delegated to this work from the Water-Powers Branch of the Department of the Interior, for the purpose of gaining experience in the methods used in our work. He assisted Mr. Keefer in work on the Canadian Northern Railway and Mr. Ford in work on the Grand Trunk Pacific."

CLERICAL ASSISTANTS.

- (1) A. J. Therien, File clerk and general office typist.
- (2) M. L. Ryan, Stenographer and accountant.
- (3) J. McCartin, Stenographer and accountant.

THE WORK TO BE DONE.

I was instructed to ascertain the approximate physical value of the entire system of the Canadian Northern Railway and of the Grand Trunk Pacific Railway, and if possible to make comparisons between certain portions of these lines and similar or adjacent portions of the Canadian Pacific lines. The entire mileage to be covered was approximately as follows:—

	Miles.
Canadian Northern System..	9,375
Grand Trunk Pacific, main line..	1,748
Grand Trunk Pacific branches..	950
Canadian Pacific..	1,352
Total..	13,425

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I was informed that the entire work must be completed by early in March at the latest, in order that the Commission might have the information in season to formulate its own report. In other words I was allowed, from the time Mr. Chadbourn was installed in his office in Ottawa, less than six months in which to make a physical valuation of 13,500 miles of railroad.

When the work began, no information in the way of profiles, list of structures, or any inventories of the physical properties, was in my hands. The offices had to be equipped with furniture, the force organized, the field work completed, and the results worked up in the office within the brief space of time. Nothing more will be necessary to convince those who have had anything to do with valuation problems, that unusual and peculiar methods were required in this work in order to compass it in this brief period. Railroads in the United States, and the United States Interstate Commerce Commission have been working for years on a valuation of railroad properties at great expense and with a large force of men, yet in this case two large railroad systems had to be valued in less than six months.

Notwithstanding the scant time weather conditions were favourable, and while it was not possible to examine every detail of the properties with care, I believe that the results are, on the whole, approximately correct and fair. The most uncertain element is land, and, if further time had been available, our figures for this item might perhaps be modified. Nevertheless, nothing is more uncertain than real estate values, and experts are often very far apart as regards the value of any particular parcel of land.

Before describing the methods adopted, it may be desirable to make a brief statement of certain fundamental principals, in view of the fact that this report may be read by persons to whom the subject of valuation is unfamiliar, and who may be unaware of the uncertainties and differences of opinion involved in work of this kind.

SOME GENERAL PRINCIPLES OF PHYSICAL VALUATIONS.

The word "value" is one of the most uncertain in the dictionary of economics, and several distinct meanings are given in treatises on that subject. An object of little or no intrinsic value may have value for its possessor, but none for any one else; that is to say, its value may be entirely sentimental, and it would fetch nothing in the market. Again, an object of great intrinsic value, measured by its cost or by the cost of reproducing it, may have no value whatever in the market, because it possesses no sentimental value or no earning power; or again, an article or a property of little intrinsic value, measured by its cost or the cost of reproducing it, may have great value in the market because it has great earning power.

By the word "value" the economist usually means value in exchange; that is to say, the price which the article of property would bring as between a willing seller but one who is not forced to sell, and a willing buyer but one who is not forced to buy.

There is no sentiment about a commercial property like a railroad. The real value of such property is measured by its earning power and by nothing else. No matter how costly or how expensive it may have been originally, its value in exchange will be measured by its earning power. Prospective earning power, perhaps under altered conditions, must of course be considered. Some properties, therefore, have a so-called "strategic" value, because, while they may earn nothing by themselves, they may be combined with other properties in a way to produce or enhance earnings.

If property is valued for the purposes of sale to a new owner, earning power, with the explanation above given, will therefore be the proper basis, taking account, in other words, of the uncertainties and potentialities of the future. This, however, would not be a physical value; that is to say, the value might include a large sum to represent location, good-will, patent rights or other elements which cost little or nothing, but which produce earning power.

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In the case of a public utility corporation, a valuation is generally made either for the purpose of regulating capital, or for serving as a basis of rates to be charged, or for condemnation, or for purposes of taxation. For purposes of taxation or condemnation, earning power may be fairly taken into account. For purposes of fixing rates, which are themselves sources of earnings, it would clearly be reasoning in a circle to base the value upon earning power; for purposes of capitalization, earning power has clearly no direct or necessary connection; in these cases, it is the physical value of the property which is to be determined; that is to say, the value of the various physical elements which go to make up the property.

To determine this physical value there are two, and only two, available bases:—

- (1) The original cost, or original cost less depreciation, according to circumstances;
- (2) The cost of reproducing the property at or about the time the valuation is made, or, the cost of reproduction new less depreciation, according to circumstances.

These two bases are entirely distinct, and should be kept so throughout the valuation; whichever basis is adopted, it must not be confused, with reference to any of the elements of value, with the other basis; otherwise, confusion will result, and the conclusion arrived at will be unintelligible. If the original cost is to be found, it must be found without the slightest reference to what any part of the property would cost if reproduced at the time the valuation is made. If the cost of reproduction is to be found, it must be found entirely without reference to what any part of the property cost originally. The result will then either be the original cost, or the cost of reproduction new, and this result can be used intelligently and with due regard to circumstances, and as to whether it is a fair measure of value. Much of the confusion with regard to the subject of valuation has arisen from combining these two methods.

The valuation of a property is generally for the purpose of ascertaining what the courts have termed "the present value" or "fair present value." Just what the present value, or the fair present value may be, is not easy to state, and probably cannot be stated. The courts, however, have frequently stated what it is not. They have again and again laid down the principle that it is not original cost. In some instances they have stated that it is not the cost of the reproduction new, but it is generally admitted, I think, that both the original cost and cost of reproduction new, and also the depreciation, depending upon circumstances, are all elements which may affect the judgment as to the "fair value."

If the problem of your commission were to determine the first cost of the properties which we have considered, this would have been a problem for accountants and not for engineers, except, perhaps, for some engineering advice on certain pertinent matters. The properties in question, namely, the Canadian Northern System and the Grand Trunk Pacific, have, for the most part, been constructed within a comparatively few years. To determine their cost would be purely a book-keeping proposition, to be performed by expert accountants, with the aid of sworn statements, affidavits, vouchers, etc. Some of the lines of the Canadian Northern, however, are old lines which have been taken over into the system within recent years. I do not know what records are available, but it is very possible that to determine the original cost of these properties would be impracticable.

I have assumed, therefore, and I think it is clearly evident from the above brief discussion, that the problem assigned to me, that of making an approximate physical valuation of these properties, must necessarily be that of ascertaining the cost of reproduction new of these properties, and not the first cost. In other words, you desire to ascertain what present investment in money may fairly be said to be represented by the physical properties concerned. If certain elements of value which originally cost

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little or nothing, like some of the real estate, have appreciated in value, the enhanced or present value is to be ascertained. If this was not your object, my valuation, as above stated would be unnecessary.

With the exception of the land, however, and those lines of the Canadian Northern System which are old lines recently incorporated into the system, in other words, for the portions of the lines considered which have been built within recent years, the cost of reproduction and the original cost should nearly coincide. The land values themselves should probably not differ greatly, except in the large cities, where in some cases, land costing little originally has now become very valuable, so that its first cost and its cost of reproduction would be very different. In the case of the older roads recently bought and incorporated in the Canadian Northern System, the cost of these properties to the Canadian Northern Company might differ greatly, both from the original cost of the properties and from their cost of reproduction new at the present time. They may have been bought at very high or at very low prices, as compared either with first cost or cost of reproduction.

These principles were briefly discussed with your Commission before the beginning of the work. The problem, therefore to be performed by the force under my direction, was to ascertain the cost of reproduction new of the properties in question at the present time. By the phrase "at the present time" is not to be understood the present moment, in view of the inflated prices for materials and labour which have come about as a result of the war; but rather, the fair cost of reproduction new, assuming that the properties were to be reproduced at fair average prices prevailing during a brief period of years just before the war. Further discussion as to the prices used will be given further on in this report.

With this brief discussion of general principles, the methods employed for the prosecution of the work, and the results obtained, may next be considered.

METHOD OF PROSECUTING THE WORK.

When this work was first undertaken I was given to understand that it would have to be completed by the end of the calendar year 1916. Under these circumstances, I addressed to Sir Henry Drayton, August 22, the following letter:—

August 22, 1916.

DEAR SIR,—With reference to the proposed valuation which your Commission is to make, I think it is desirable to obtain from the railway companies whatever information on this subject they already have. A detailed valuation of these properties such as is being made by the Interstate Commerce Commission, or such as has been made by various States, would cost a very large sum of money, take a very long time, and would, in my opinion, be entirely unnecessary. All that your Commission should do, it seems to me, is to apply an approximate yard stick in the manner which you yourself have suggested, namely to find the value per mile of certain typical pieces of road, and then to apply these prices to the railroads in question, having due regard to similarity of conditions and taking account of any exceptional elements of value. The first thing to do is to find out what information the companies are prepared to furnish. Very likely they can give unit prices for all the elements involved and perhaps they have inventories of the various structures and other properties which they possess, with costs, either original costs, or fair present costs.

I would therefore suggest that you ask of them such information as they are prepared to furnish, taking up in order each of the elements of value according to the classification required in your accounts, which I have not before me, but which probably follows in some general way the list below. Some of this information will probably be better obtained by personal conference between

your engineering force and the engineering force of the companies, in order that it may be given in the form desired. I would therefore make the following suggestions, taking up in order the various elements which go to make up a railway property:—

1. *Right of way and station grounds.*—Whatever information the roads have with reference to the cost or assessed value of the right of way; width of right of way.

2. *Real estate.*—Some information as to the value or cost.

3. *Clearing and grubbing.*—Cost of rock, loose rock, and earth excavation on different portions of the line. Probably the companies can give us actual contract costs covering a wide variety of conditions.

Profiles of the lines.—If the companies have complete profiles, they could probably loan them to your Commission for study in the office or on inspections.

4. *Tunnels.*—Number, length, section, material, cost.

5. *Bridges, trestles and culverts.*—Possibly the companies may have complete lists of these structures, and information regarding general dimensions, material, and type, and perhaps also cost.

6. *Ties.*—Cost and number per mile.

7. *Rails.*—Weight, date of laying, length and cost delivered on the ground.

8. *Frogs, Switches and crossovers.*—Types used and prices paid. Perhaps the companies also have the number.

9. *Track fastenings and other materials.*—Standard type and the cost.

10. *Ballast.*—Standard cross-section of road-bed on different parts of typical portions of the line, kind of ballast and quantity per mile, cost of ballast of different kinds, under the different conditions.

11. *Track laying and surfacing.*—Cost.

12. *Cattle-guards.*—Standards, cost.

13. *Fencing right of way.*—Type, cost, and length.

14. *Interlocking and other signal apparatus.*—Statement of kind, number, etc.

15. *Crossings and signs.*—Standards and what other information the companies have.

16. *Telegraph and telephone lines.*—General Statement.

17. *Station buildings and fixtures.*—Possibly the companies have a complete list of stations, with information regarding size and material of buildings.

18. *Shops and engine houses.*—List and general description.

19. *Shop machinery and tools.*—List and location of shops and size, and such other information as may be available.

20. *Water stations and purifying plants.*—List and general description.

21. *Coal handling plants.*—List and general description.

22. *Grain elevators.*—List and general description.

23. *Storage warehouses.*—List and general description.

24. *Dock and wharf property.*—List and general description.

25. *Power plants and transmission.*—General statement.

26. *Snowsheds.*—Standards, length, cost.

27. *Masonry.*—Possibly the companies have complete lists of masonry structures, cost of concrete and stone work per yard on different typical sections.

28. *Overhead bridges.*—Possibly they have complete lists of these.

29. *Coal and ore docks.*—List and general description.

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30. *Floating equipment.*

31. *Hotels and restaurants.*—List and general description.

Finally, statement of any other property of the companies.

Yours truly,

GEO. F. SWAIN.

Sir HENRY L. DRAYTON,

Commission of Inquiry into Railways and Transportation.

In accordance with this letter, a communication was sent to each of the railroad companies by Sir Henry Drayton, a copy of which follows:—

AUGUST 22, 1916.

MY DEAR MR.———You have already been written to for several characteristic costs. The engineer in charge of physical valuation desires the data required by the enclosed memorandum, and the Commission would be obliged if the same is forwarded at the earliest possible date.

We understand that most, if not all, of this data is available. Speaking generally, it is required for the annual report. In order that there may be no delay, the Commission will be much obliged if the company will forward the information which it can now readily compile, as well as any other further information bearing on the value of the physical asset that the company may have, at the same time indicating what, if any information desired it has not got and how long it will take to prepare it.

Yours faithfully,

H. L. DRAYTON.

Enc.

INFORMATION REQUIRED FROM RAILWAY COMPANIES AS TO PHYSICAL PROPERTIES.

1. Right of way and station grounds: The cost to the company of purchasing or otherwise acquiring its right of way and station grounds, for each of the company's different operating divisions, and the present assessed value of the same, together with accurate data as to the width of the right of way and acreage of station grounds.
2. Information as to the cost of the company and present assessed value of the real estate owned by the company, other than the right of way and station grounds, by the different operating divisions in which it is situate, showing its acreage and the purpose to which it is put.
3. Cost per yard of solid rock, loose rock, earth excavation work, and other material on the company's several operating divisions.
4. The production of the company's working profiles under which the line was constructed; such profiles to show the classification of the different excavations and fills and their quantities.
5. The number of tunnels, their respective lengths, sections, material, cost and location.
6. A return of the company's information as to the number of bridges, trestles, showing where they are situated, their length, height, dimensions, material, type and cost.
7. A return of the company's information as to the number of culverts, showing where they are situate, their length, height, dimensions, material, type and cost.
8. The number of ties per mile and their cost.
9. The weight, date of laying, length and cost of rails at mills and delivered on the ground.
10. Such information as the company possesses as to the frogs, switches, cross-overs, passing tracks, and sidings in each operating division; such information to show types used and standard prices paid.

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11. Details as to track fastenings and other materials used, the company's standard type and cost.
12. Ballast—Standard cross-sections of the road-bed on different parts of typical portions of the line, showing the kind of ballast used, depth, and quantity in yards, per mile, together with the cost of the different types of ballast used.
13. The cost of track laying and surfacing in each operating division.
14. The number of cattle guards in each operating division, and cost.
15. The type of fences used in each operating division, the length of fence, and cost per mile.
16. The location of interlocking and other signal apparatus in the different divisions, with information as to their character, number, and cost.
17. The cost to the company of crossings and signs, and their number in each operating division.
18. The company's telegraph and telephone lines in each operating division, the number of wires and poles used, and cost per mile.
19. The number of station buildings, freight sheds, or other facilities in each operating division, size and material, and cost to the company.
20. A list of all shops, engine houses, and turntables in each operating division, giving particulars as to size, with cost, and a general description thereof.
21. The cost to the company of the shop machinery and tools located in the shops.
22. list of all water stations and purifying plants located on the different operating divisions, and their cost to the company.
23. A list and general description of coal handling plants and fuel stations on each operating division, and their cost to the company.
24. A list and general description of all grain elevators owned by the company on each operating division, their capacity, and cost.
25. Storage warehouses: A list and general description of all storage warehouses owned by the company on each operating division, their capacity, and cost.
26. A list and general description of all dock and wharf property owned by the company on each operating division, their capacity, and cost.
27. A list and general description of all electric light, power, and transmission plants owned by the company on each operating division, their capacity, and cost.
28. A list and general description of all gas-producing plants owned by the company on each operating division, their capacity, and cost.
29. A list and general description of all snowsheds owned by the company on each operating division, and cost.
30. The number of overhead highway bridges on each operating sub-division, their length, type, and cost to the company.
31. The number of gates and electric bells maintained by the company at crossings on the different operating divisions, and their cost.
32. A list and general description of all coal and ore docks owned by the company on each operating division, their capacity, and cost.
33. A list and general description of all hotels and restaurants on each operating division, owned by the company, and their cost.
34. Any other property owned by the company on its different operating divisions, its description, and value.

After the return of the Commission from its western trip, about the end of September, I was given to understand that my work need not be completed until early in March. In the meantime, no data had been received from the companies excepting a few profiles and some lists of bridges. It was essential, therefore, if any field work were to be accomplished during the season, that the field men should be started at once. The time between Mr. Chadbourn's arrival in Ottawa, September 6, and the first week in October, had been consumed in conferences with the companies with reference to

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the character of the material to be furnished, in preparing the offices, in engaging and instructing the men, in the preparation of instructions for field engineers, and in the preparation of some typical yardsticks or estimates of cost per mile of typical lines, omitting special items. It was decided to carry out a valuation reconnaissance, sending engineers over all the lines, with such profiles, lists, and other information as was available, with instructions to observe and note all elements of physical value.

Considering the difficulties in getting men, the fact that no information was available at the start, and that the men secured had had no experience in valuation work, I consider that we were as expeditious as could have been expected, in being able to start our field work, as we did, by the middle of October. It takes time to collect a force of competent men, and, on account of the war, the fact that we were limited to Canadian engineers, it took, in this case, longer than it would ordinarily have taken.

We had hoped and expected to receive from the Canadian Northern Company all profiles before the field men started on their work, in order that they might go over the lines with those profiles before them. By the middle of October, however, we had only received profiles for a portion of the lines, so that in most cases the field men were obliged to start with no data, but simply with their note-books.

On October 16, Mr. Chadbourn and I, accompanied by Mr. W. P. Kellett, a well-known Canadian engineer of Brantford, Ont., who had had to do with the construction of several railroads, and Mr. D. O. Johnson, of Toronto, a contractor of long experience in railroad work, and accompanied also by a number of our field engineers, set out from Ottawa for a trip to the Pacific coast by way of the Canadian Northern lines going west, and the Grand Trunk Pacific returning. On this trip the field engineers were instructed as to the method of taking their notes, the points to be observed, and all other pertinent matters. Each field engineer was left at a suitable point in the territory assigned him, while Mr. Chadbourn, Mr. Kellett, Mr. Johnson, and myself proceeded upon our trip, picking up from time to time other field engineers whom we had engaged, and instructing them similarly.

The main purpose of this trip was to enable Mr. Chadbourn and myself to become thoroughly acquainted with the lines on which we were engaged, the physical characteristics of the country, and also in order that we might discuss with Messrs Kellett and Johnson and with the superintendents and engineers of the companies the question of unit prices. Each evening a session was held at which these matters were discussed, and each member of the party expressed his opinion as to the fair unit price to be assigned to each of the elements involved. Records of these opinions were kept and have been of great service in the office in deciding upon the final unit prices to be assumed. In connection with this work, Messrs. Kellett and Johnson rendered service of great value. Both of these gentlemen are men of experience and excellent judgment, and having had experience, in many cases, in the very territory through which we were riding, they were able to take account of local conditions, and to give reliable and unprejudiced opinions. The superintendents and engineers of the Canadian Northern Railway were also of much service to us, telling us actual prices paid, actual values of farm lands, actual methods of construction employed and in other ways giving information of great value, all of which was noted and used in the final figures.

The field engineers were sent over all of the lines, and instructed to take a position at the rear of the train and take note as they went along, of every element of physical value which could be observed. While stopping at stations, they were to descend from the train, observe the rails, the spacing of ties, the character and depth of ballast, width of right of way, and any other elements which the time allowed. When longer stops were made, as at division points, they were to make sketches of the yards, buildings, and other property, with as much pertinent information as possible; they were to confer with division superintendents, engineers, track foremen, and any other railroad employees who could give them information; they were to make inquiries of railroad

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officials, real estate agents and others as to unit prices, value of right of way and station grounds, and any other pertinent matter. If necessary, they were to travel several times over the line, observing each time only certain selected elements, or to return to division terminals or important towns, stopping over as long as might be necessary to gain necessary information. They were to ride on freight or passenger trains, and in some cases a gasoline motor car was put at their disposal, or they used hand-cars with the assistance of the track-gangs. In other words, by riding over the line and stopping as long as necessary at proper points, they were to make a physical inventory of the properties.

They were to observe the general character of bridges and other structures, the character and classification of material in cuts, the presence of borrow pits, the slope of the ground at cuts, the width of road bed, character of drains, presence of muskegs, or other points where difficulties were probably met in construction, the probable amount of clearing, character of telegraph lines, fences, and in short, they were to make note of any matters which were necessary in order to make it possible in the office with the aid of the lists, standard plans, and profiles, to inventory and value the physical property.

For this work engineering experience and good judgment were of course necessary. An experienced man, by riding over a line once, especially in the prairie section, would be very apt to note with reasonable accuracy all elements of value. In more difficult country several trips over the line might be necessary, each trip being devoted to the observation of certain particular elements. Station buildings and roundhouses were all built to standard plans designated by numbers, and all that was necessary was to note the number, so that afterward in the office the inventory and valuation might be made.

In all of this work the operating officials of the company co-operated most cordially, supplying the field men with information, providing them with transportation facilities, and in general, doing all they could to facilitate the work. My sincere thanks are due to the company and its officials for their attitude and their co-operation in these matters.

A special expert was engaged to estimate the value of buildings. In his hands were placed the standard plans as soon as received from the companies, and upon them he based his estimate of cost of reproduction. This expert travelled over a good portion of the lines, visiting at all events important terminals, and inventorying all buildings of every kind, and noting character of construction and any other elements affecting cost.

The plan of work adopted will be made clearer by the detailed instructions to field engineers, which were as follows:—

INSTRUCTIONS TO FIELD ENGINEERS.

(a) *General*.—The object of this bureau is to make a close valuation of the property of certain railroads in the Dominion of Canada. Great care must be taken to include everything that is owned by the railway companies.

Information obtained from any railroad company or any of its employees, or from local residents on any part of the line must be verified to the satisfaction of the inspecting engineer in the field. All employees must bear in mind that they are not in any way employees or agents of the railway company, and that they are to form their own conclusions without any regard to the purposes for which the valuation may be made.

Constant vigilance must be exercised to avoid omission of hidden quantities or extraordinary cost conditions. It is desired to make as rapid progress as is consistent with good work, it must be borne in mind, however, that it is not attempted to make a minute detailed inventory, but conclusions must be arrived at from a careful analysis made of analogous conditions, applying these units of measurement thus carefully

ascertained to other similar territory, noting during inspection such variations as can be observed or discovered.

(b) *Typical Mile.*—A statement will be furnished each inspecting engineer showing the quantities covered by such of the accounting classifications as are most nearly independent of the topography of the country. Each engineer must acquaint himself thoroughly with the method of preparation of this type and must have completely in mind at all times the elements of cost which have been included therein, and those which have been omitted on account of their variability. This type has been prepared from careful inspection and stated actual quantities found in long stretches of similar country, which have been averaged so far as the quantities are concerned to include the average amount of such quantities per mile. Tentative unit costs have been used in the preparations of the type for such items as are most nearly constant. These unit costs will be revised later and the variable features together with their cost will be added on the basis of the data gathered and the opinion of the inspecting engineer in each district. The inspecting engineer is to make full notes of variations from the typical mile, also of all property not covered by this typical mile, and also such estimate of unit costs or total costs as he may be able to form.

(c) *Method of Inspection.*—The entire line will be traversed by an inspecting engineer, generally using regular trains, sometimes using gasoline inspection car as may be supplied by the railroad company, and in isolated cases possibly by a special train using a business car. It may be necessary where trains are used to arrange with the railway company for a business car. The engineer should make his notes in such a manner that his attention shall be drawn as little as possible from a close observation of the property. (See *e.*) In occasional places it will probably be necessary for him to walk over the line, or parts of it, to secure the use of section-men's car.

Inspection made in the manner above described will not include large yards and terminals, which must in every case be handled by the engineer spending considerable time at the yard or terminal, having in his possession at the time the map of the same as submitted by the railway company.

The inspecting engineer having obtained from the railway company, generally through this office, such condensed data as he can carry with him, and having familiarized himself with the typical unit, should, in his field inspection, note carefully all divergencies from the standard type, both as to deficiencies and additions.

(d) *Elements of property.*—In the following paragraphs will be found notes relating to each classification given:—

(1) *Engineering.*—No attention will be paid to this item in field.

(2) *Right of way and Station Grounds.*—The railway company will furnish data relating to width of right of way and the extra width at stations. The inspecting engineer should, so far as practicable, roughly observe this width and make occasional note on his observation. Perhaps while stopping at some station he can pace the width. It is important, however, that he should make enquiry and obtain as accurate information as practicable, as to the *value* of adjoining land; not what it cost the railway company to obtain the right of way, but the present real value of adjoining lands for the purpose for which they are used. This statement applies generally to rural land. In the larger towns he should make more careful inquiry, if opportunity presents itself to do this on the trip; at least he should make every effort to do so. He should remember later, in the office, in making up right-of-way values, multiples will be applied to the basic values as above secured, to represent the additional value for railway purposes on account of severance, damages, cost of acquisition, etc. He should make every effort to secure sufficient data to form a definite opinion for any particular line in its entirety, leaving very little subsequent work in this category to

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be done, otherwise the work will be very much delayed. It will be necessary for the inspecting engineer to stop at larger towns or cities for such time as may be necessary to gain the requisite information. (See *e.*)

(3) *Real Estate*.—This is an item for special investigation and will in general receive no attention from the inspecting engineer while inspecting lines, unless he can conveniently obtain information, in which case he should not omit to do so.

(4) *Grading*.—The inspecting engineer must note carefully the amount and character of work on each line. He will have with him the profile of the line, but it will not be practicable for him to note in each cut the classification of material. To attempt to do this would make it impossible in many cases for him to make any other observations, and his estimate, moreover, would be likely to be largely in error. He should, however, make general notes on each sheet as to the material in cuts, such for instance as "cuts all rock," "cuts mostly earth," or such other, general observations, as to quantities or material, as the case admits. From his inspection and from such other data as he may be able to secure, the office force will check up the information received from the company.

He should also be careful to observe and make notes relative to clearing and grubbing.

A sharp lookout should be kept for any stream diversions, retaining walls, riprap, cribbing, or bulk heads. Relative to these five items, if he is not able on his first trip to make sufficient notes to make the approximate estimate he should make inquiry from proper railroad authority and possibly in some cases visit the site again.

It will be necessary to keep a sharp lookout and make notes concerning muskegs, sink holes, and the like. The railroad company will furnish data relating to such places and show their location, but the inspecting engineer must make as careful observation as time permits. It will be necessary to be liberal in treatment of these matters for it is extremely difficult to determine after completing the line what work has been necessary in such places.

Care must be taken to note where there is more than one track in order that suitable roadbed width may be taken into account.

(5) *Tunnels*.—These will be special in every case except where they are very short and therefore of little consequence. The inspecting engineer will make note of all tunnels and character of lining, if any. In case of long tunnels, the railroad company will furnish complete data which will be turned over to the inspecting engineer for him to approximately check up.

(6) *Bridges, Trestles and Culverts*.—For our units of estimation, an amount per mile expressed in dollars will be determined from profiles for territory where culverts are small and infrequent. Usually a profile will give sufficient data.

The railroad company will furnish a list of all bridges showing character, quantity of steel and quantity of masonry. The inspecting engineer should check this list as he travels over the line. If he has no list, he will note character of each bridge.

(7) *Ties*.—Determine number of ties per mile by counting the numbers of ties per rail length at times when the train is stopped, being careful to note whether 30 foot or 33 foot rail is used. Also make inquiry where possible, of section foremen, roadmasters, or others. Note also approximately the kind of ties. If they are largely of one kind, or if mixed, make note of that fact. At close of day's work make a general note from your impressions, of the condition of the ties. Make note whether the turnouts have switch timber or are laid with the ordinary track ties. Make notes and secure data, from inspection or inquiry, of the size, kind and spacing of bridge ties. Note particularly if any treated ties or treated bridge timber is found and from inquiry or inspection make sufficient notes to determine quantity.

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(8) *Rails*.—Note weight of rail per yard in main tracks, and in sidings if possible. At close of each day's work, make a note relative to the condition of rail.

(9) *Frogs and switches*.—From observations made during the day's work make notes at night relative to the kind of frogs, switch stands, switches, and as to their general condition.

Make note of any railroad crossings and roughly the angle and if possible note if it is made of ordinary rail, heavily reinforced, manganese steel or any special feature relating to the same.

(10) *Track fastenings and other materials*.—Make special observations during the day and record at night notes relative to type, length, number of bolt holes in angle bars, and in case any other type of joint is discovered, make note relative to same.

Note during inspection any guard rails on curves, bridges or in tunnels.

Note or secure information relative to the use of tie plates, rail braces or anti-creepers.

(11) *Ballast*.—Be careful to make sufficient notes of the different kinds of ballast so that a close approximation can be calculated from notes. More particularly note the kind of ballast and both from inquiry and observation determine its depth, note as so many inches under the tie.

From inquiry ascertain the approximate or average distance to haul ballast on any particular line, as this feature frequently adds very materially to the cost of ballast.

(12) *Track Laying and Surfacing*.—As this is entirely a labour item it can be arrived at readily in the office, but if there are any special or unusual features which make this item more costly than is customary, make notes and state carefully the reasons for conclusions arrived at.

(13) *Railway Tools*.—No attention need be paid to this on inspection trip.

(14) *Fencing Right of Way*.—Note with reference to all the line inspected each day whether it is fenced on one or both sides, and the character of the fence. If possible make brief notes concerning cattle guards and wing fences thereto, and any side fences at highway crossings.

(15) *Crossings and signs*.—Make such observations during his inspection as will enable him to make notes concerning approximate number of various kinds of signs, such as mile boards, whistle posts, station boards, crossing signs, etc. Note the existence and location of over or under crossings, gates, alarm bells, etc.

(16) *Interlocking and other Signalling Apparatus*.—Make general notes regarding apparatus coming under this heading and its character and location.

(17) *Telegraph and Telephone Lines*.—Observe and make such notes as may be necessary, stating whether such lines exist or not, the number of wires, the approximate number of poles per mile. Secure from proper railroad authority data with reference to number of instruments and other special apparatus coming under this heading.

(18) *Station Buildings and Fixtures*.—Make suitable notes relating to stations and accessory buildings. At each station note character and approximate dimensions of each building, platforms, and coverings:—

(a) For the usual customary small station existing at most points an estimate will be furnished and a proportional amount of same will be included in the typical mile.

(b) Where a more costly or more extensive station and other buildings exist, further data will be necessary to make a special estimate of same. In

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such case make such notes as practicable without a special stop and later secure additional data if necessary from the main office, or from railway company. In most cases sufficient data will be furnished by the railroad company.

(c) At large stations and terminals this matter will be considered by a special engineer. Make a note for each day showing general condition of buildings as good, fair or poor.

(19) *General Office Building and Fixtures.*—The inspecting engineer will not consider this matter at all unless instructed to do so. He should, however, make note of such buildings.

(20) *Shops, Engine-house and Turn-tables.*—The railroad company will furnish complete data for all structures coming under this heading, and such information will be furnished to the inspecting engineer. He should, however, make general note of their existence, character and size.

Where these structures occur at terminals and at the larger places where inspecting engineer will probably stop in any event, he should make full notes concerning the structures as to size, kind, character of construction and any other special features to enable an approximate estimate of the value of the structures to be made.

(21) *Shop Machinery and Tools.*—The inspecting engineer will give no attention to items coming under this heading unless he is specially requested to do so, in which case a full list and description of the items will be furnished him in order that he may make an approximate check.

(22) *Water Stations.*—The inspecting engineer will note the location of water stations and information concerning their character.

If there are any special features, such as reservoirs, dams, or treating plants, he must secure from proper source sufficient information for an estimate of value to be made. The railroad company will furnish complete data regarding these matters, and in general it will only be necessary for the inspecting engineer to check such information.

(23) *Fuel Stations.*—The inspecting engineer should note the location and character of all the fuel stations. Complete data will be furnished by the railroad company of all such stations, and in general it will only be necessary for the field engineer to check such data.

(24) *Grain Elevators.*—The inspecting engineer should make note of the location of any elevators belonging to the railway company, and if possible state kind of construction, capacity and type.

(25) *Storage Warehouses.*—Inspecting engineer should make note of the location of any storage warehouses, and if possible give approximate size and type of construction.

Buildings coming under this classification are not the ordinary freight warehouses where freight is received for shipment, but are houses in which merchandise is stored and which is operated as a storage warehouse solely.

(26) *Dock and wharf property.*—Make such notes as practicable.

(27) *Electric light plants.*—If the existence of any plants coming under this heading come to the knowledge of the inspecting engineer he should make note of it, and notify this office promptly of its location.

(28) *Electric power plants.*—If the existence of any plants coming under this heading come to the knowledge of the inspecting engineer he should make note of it, and notify this office promptly of its location.

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(29) *Electric power transmission*.—If the existence of any plants coming under this heading come to the knowledge of the inspecting engineer he should make note of it, and notify this office promptly of its location.

(30) *Gas producing plants*.—If the existence of any plants coming under this heading come to the knowledge of the inspecting engineer he should make note of it, and notify this office promptly of its location.

(31) *Miscellaneous structures*.—Under this heading are included all structures which do not come specifically under some one of the previous classification. They should be noted in as great detail as the case warrants.

The typical unit includes an item to cover the occasional minor structures charged to this account.

(e) *Special details*.—The inspecting engineer will, before beginning his inspection, thoroughly familiarize himself with these instructions and with the pamphlet entitled "Classification of Expenditures for Road and Equipment," and will carry a copy of each with him.

He will also carry a 6-foot folding pocket rule.

He will also carry with him such data relating to the line, such as profiles, bridge lists, etc., as may be available.

He must plan his inspection with care, having reference to time schedules, the time necessary for stops in towns, etc., having in view the economical and expeditious prosecution of the work. If he goes over a line twice, once going and once returning, he should divide the work between the two trips; for instance, observing track going one way, and buildings the other.

In the course of his work, the inspecting engineer will probably be able to pick up items of information as to unit prices at the present time, fair average unit prices, and cost of certain elements. All such information should be noted, *together with its source*.

He should also note, on each line or portion thereof, the *general condition* of the property, whether it has been maintained in good operating condition, or whether it has been allowed to depreciate unduly. This should be noted on each sheet.

As soon as the inspection of a line is completed, the results should be sent, registered, to the office at Ottawa, in order that they may be examined and worked up.

Many of the items included in the various accounts are included in the typical unit. The primary features to be observed by the inspecting engineer are the items which vary or differ from that unit, or are not included in it, deductions or additions may be made as the facts require.

These items are the following:—

(2) and (3) Real Estate: Unit prices of these are, of course, subject to wide variation. The inspecting engineer can obtain much information on these matters, particularly in rural territory; but much will be obtained from the companies or will be secured elsewhere.

(4) Grading.

(5) Tunnels.

(6) Bridges.

(11) Ballast.

(14) Fencing.

(15) Crossings and signs, so far as concerns over or under crossings.

(16) Signals.

(18) Buildings.

(19) to (31) Special items.

For these items, more or less complete data will be furnished by the railroad company, and they should be carefully observed by the inspecting engineer, in order that a reasonably close check may be made.

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If any items are overlooked be sure that it is the small ones, such as signs; and in any event give the least attention to the least important items.

Inspecting engineers should be in thorough harmony with the general plan and methods of this work, for only in this event can the best results be obtained.

Each inspecting engineer must report daily by mail to the head office, in Ottawa, stating the work done during said day, and must keep the central office informed as to where he can be reached by mail and by telegraph. If necessary, use the telegraph, but avoid such use as much as possible, and in the event of a long message being necessary, send night-letter or day-letter as circumstances dictate.

(f) The inspecting engineer should make note of all unnecessary work, specifically stating, if possible, its character and amount.

In the manner above described, all of the lines of the Canadian Northern Railway system, with the exception of the Halifax and Southwestern Railway in Nova Scotia, and the Niagara, St. Catharines and Toronto Railway, and all of the Grand Trunk Pacific, together with a few typical sections of the Canadian Pacific, were covered by our field engineers between the middle of October and the end of the year. Very fortunately for us, there was no snowfall until late in the season, and we were able to complete our work practically with no snow on the ground.

Since the beginning of 1917, the Niagara, St. Catharines and Toronto Railroad has been inspected, though under less favourable conditions, but no inspection has been made of the Halifax and Southwestern Railway.

While the above described work was being carried on in the field, information was slowly coming in from the railroad company. As fast as received, this information was worked up in the office. So-called typical units were prepared, the items of property being classified in accordance with the classification adopted by the Railroad Commission, and the values of certain standard items, such as rails, frogs and switches, track fastenings, and other items which might fairly be assumed as standard, were listed; variable items being left to be filled in after the completion of the field work. The standard items and the quantities of excavation were worked up from the profiles, plans of stations and sidings, rail maps, and other information received from the companies.

When the field men returned, therefore, all of this information was available and all the profiles received up to that time had been gone over and the quantities calculated, assuming the surface of the earth to be level. Each field man was thereupon assigned to the final computation of lines in his territory, based on the information which he had secured with reference to slope of ground and classification, the grading quantities were corrected, all the other items checked, and the special items inserted. The record for each line with all computations, was kept in a separate book, in the front of which was pasted the typical unit for that line with the average cost per mile, excluding items purely special, and at the end of each are computed the final cost of reproduction per mile of such line, and its total cost of reproduction, including overhead charges, together with the depreciation.

The final result for each line was entered upon a card, and the cards kept together in a filing case. These cards, together with the books, constitute a permanent record of the results for each line, and can be used in future as occasion may demand.

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The following is an illustration of a typical unit and of the card which goes with it:—

COMMISSION OF INQUIRY INTO RAILWAYS AND TRANSPORTATION.

TYPICAL UNIT.

Canadian Northern Railway Saskatoon—Munson
Single track. 302.5 miles.

		Depre- ciation.
	\$	\$
2 Right of way and station grounds.....	660	0
3 Real estate.—Special	0	0
4 Grading		
Clearing and grubbing.....	0	
Other grading items.....	\$3,645	
5 Tunnels—None	3,645	0
6 Bridges—None.....	0	0
Trestles, etc.	\$633	253
Culverts, pipes, drains, etc.	126	36
7 Ties, 2,985 per mile at 70 cents		
Bridge ties 1.8 M.B.M. at \$55		
Switch ties 1.8 Turnout at \$55	2,188	1,092
8 Rail (60 pounds), 104 tons at \$39.02 per ton.....	4,058	1,189
9 Frogs and switches	49	15
10 Track fastenings and other material—		
110.3 % A. bars at \$250.22 per mile=	\$276	
110.3 % bolts at 48.05 per mile	53	
Spikes 3,000 ties at 2.6 pounds per tie=78 cwt. at \$2.73 per cwt.=.	213	
Tie plates per mile at — each=		
11 Ballast, 1,646 cubic yards per mile at 75 cents per cubic yard in place.....	542	163
12 Track-laying and surfacing 110.3 % of a mile at \$550 per mile plus (for lying) .5	1,202	601
of a turnout at \$50 each	632	316
13 Roadway tools, 1 outfit at \$160 divided by 8.....	20	10
14 Fencing—right of way—2 fence miles at \$250 per mile, plus cattle guards and		
gates.....	553	276
15 Crossings and signs.....	37	18
16 Interlocking and other signal apparatus, 10 % station semaphore at \$40	4	1
17 Telegraph and telephone lines—1 mile at \$306, plus 10 % for instruments, etc.....	337	112
18 Station buildings and fixtures.....	486	212
19 General office buildings—None.....		
20 Shops, etc.—Special.....		
21 Shop Machinery—Special.....		
22 Water stations.....	234	58
23 Fuel stations.....	113	28
31 Miscellaneous structures.....	556	139
Maintenance and temporary work during construction.....	250	
Solidification and adaptation or deferred construction.....	320	64
Total	\$16,645	
Cont.=5% of total; Dep. of C.=20%=1% of total.		
Depreciation of Contingency item.....		166
Depreciation per mile of track.....		\$4,658

NOTE—Where details are not shown, they may be found in detail book.

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CANADIAN NORTHERN RAILWAY.

Card No.	(Main Line)	Saskatoon -Munson V.S. 47	302.5 miles.
\$16,645	(From typical unit) x 302.5 miles.		\$ 5,035,112
Special Items	{ Engine-house, turntable, etc., at Kindersley.		47,055
	{ " " Hanna.		64,416
	{ Shop machinery at Kindersley and Hanna.		19,377
	{ Interlocker and frogs M.P. 3 8 G.T.P.		5,614
	{ Portion of Saskatoon Terminals property		97,500
			<u>\$ 5,269,074</u>
Overheads :			
Total land, \$660 x 302.5 + \$97,000	\$ 297,150, 24% on land.		71,316
Other Meas. Items.	4,971,924, 27.2% on O.M.I.		1,352,363
	<u>\$5,269,074</u>		<u>\$ 6,692,753</u>
	Rate per mile, \$22,125.		
Inspector :	Balloch.		
Statements :	Chadbourn.		

For details of overhead percentages, see pages 31-32.

(Back of card.)

LAND, INTEREST AND DEPRECIATION.

(\$16,645-660) x 302.5)	\$ 4,835,462
Special items other than land.	136,462
Total less land	<u>\$ 4,974,924 basic cost.</u>
	297,150 land.
10% on basic cost.	\$ 497,192
18% on land.	53,487
	<u>550,679 interest.</u>
17.2% on basic cost.	\$ 855,171
6% on land.	17,829
	<u>873,000 rem. overheads.</u>
	<u>\$ 6,692,753 Total.</u>
Depreciation (\$4,658 x 302.5)	\$ 1,409,045
" Special items.	34,114
	<u>1,443,159</u>
Estimated cost of reproduction less depreciation.	<u>\$ 5,249,594</u>

DETAILED METHODS OF WORK.

The making of a physical valuation involves two distinct operations: (a) The determination of quantities; (b) the determination of the unit prices. The total value of each item is the product of the quantity and the unit price.

More detailed information with reference to the methods of obtaining these elements will be found in the report of the Chief Engineer, Mr. W. H. Chadbourn, which is attached hereto. A brief summary, however, may here be given.

(1) Canadian Northern Railway System.

(a) Determination of Quantities.—(Using classification of Railroad Commission.)

(2) Right of way and Station Grounds.

(3) Real Estate.

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The right of way on these lines is practically uniform in width for many miles with an increase of width at station grounds for a definite length, all dimensions being standard. The location of stations being known, together with the standard widths, the number of acres of right of way, including station grounds, per mile, is easily obtained. At larger towns and cities where the companies possess terminal property or other real estate, maps were supplied showing location of such property. The areas were computed and tabulated and the values ascertained by special investigation.

(4) *Grading*.—No attempt was made to determine quantities of grading in the field. These quantities in the case of the Canadian Northern Railway were determined from the profiles, assuming first, that the ground was level, and then modifying this result on the basis of information noted by the field engineers. Classification of material was made on the basis of notes by the field engineers, and also the amount of clearing and grubbing. Overhaul was estimated on the basis of the profiles and the location, where, although the centre line would show no cut or fill, there was cut on one side and fill on the other.

(5) *Tunnels*.—Detailed information was in every case secured from the company relating to the length and cross-section of tunnels. Field engineers noted character of material.

(6) *Bridges, trestles and culverts*.—Lists of these structures were furnished by the railroad company, and lengths were taken from the profile. Weights of steel or quantities of timber were estimated from standard diagrams, those for timber trestles having been prepared in the office, giving quantities per foot-length for various heights, based on the standard designs. Small openings, such as pipe and box culverts, were all estimated from the profiles.

Track, including:

(7) *Ties.*

(8) *Rail.*

(9) *Frogs and switches.*

(10) *Track fastenings.*

(11) *Ballast.*

Quantities of these items were based on observations by the field engineers together with such information as was afforded by the profiles and maps of station grounds supplied by the company.

(12) *Tracklaying and surfacing*.—To estimate this, the mileage of sidings, as determined from the profiles, together with mileage of yard tracks, as determined from maps or by the field engineers, was added to the main line mileage and an allowance was made for an average number of turnouts.

(13) *Roadway tools* were estimated arbitrarily, this item being very unimportant.

(14) *Fencing*.—Quantities of this item were estimated from observations by field engineers.

(15) *Crossings and signs*.—This item, in general small, was estimated, based on general notes.

(16) *Interlocking and other signal apparatus.*

(17) *Telegraph and telephone lines.*

(18) *Station buildings and fixtures.*

(19) *General office buildings.*

(20) *Shops, etc.*

(21) *Shop machinery.*

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- (22) *Water stations.*
- (23) *Fuel stations.*
- (24) *Grain elevators.*
- (25) *Storage warehouses.*
- (26) *Dock and wharf property.*
- (27) *Electric light plants.*
- (28) *Electric power plants.*
- (29) *Electric power transmission.*
- (30) *Gas producing plants.*
- (31) *Miscellaneous structures.*

All these elements of value were observed by the field engineers and their general character noted. Standard plans for structures and lists of all structures existing were submitted by the railroad company. These were compared with the records of the field engineers. Most of the structures were of standard type and all that was necessary for the field engineers to do was to note the type, as for instance, "Station Building, Type 5." At yards and terminals, where a large number of buildings existed, these were either noted by the inspecting engineer, or in some cases taken from the plans which had been verified in the field. Towards the end of the work, that is, during the month of February, complete lists of property were received from the railroad company. These were compared with the data which our field engineers had procured and which had been used in our estimates and which in most cases were found to agree closely. Where time permitted and there were discrepancies, some modification of our estimates was made.

On all the British Columbia lines of the Canadian Northern system, from Yellowhead pass to Port Mann, and the lines on Vancouver island, as well as branch lines under construction, we were supplied by the company with data showing the actual pay quantities, and these were used in the estimate.

(b) *Determination of Unit Prices.*

This being an estimate of the cost of reproduction of the properties, it was necessary to take unit prices which should represent fair average values in recent years; eliminating, however, all abnormal prices due to the war, and taking account also of any definite trend in prices.

In other words, in the case of articles the price of which has fluctuated from year to year previous to the war, but in which there was no definite trend of price, either up or down, the intention was to take a fair unit price during the period of say, three to five years previous to the war.

Certain articles, however, show a definite trend in price, so that although there are fluctuations from time to time due to variations in supply and demand and other causes, the average price may be gradually increasing or decreasing. In such case, in making an estimate of the cost of reproduction, the latest fair average price, independent of what might be called accidental fluctuations, should be taken. In the case of lumber, for instance, owing to the gradual diminution of supply, the fair average price has been gradually increasing during the last ten or twenty years. In such a case it would not be fair, in an estimate of the cost of reproduction, to take the average price for a period of years, but it would be more reasonable to take the most recent price, unless the same were abnormally high or low due to accidental causes. Some other materials have illustrated the case of a gradual decrease in price, subject of course, to accidental fluctuations; such, for instance, has probably been the case in general with cement, which during the past twenty years, with the great increase in American production, has gradually dropped in price, although there have been great fluctuations depending upon the extent of building operations, which themselves have

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been largely dependent upon financial conditions. In the case of land, no account could of course be taken of what was clearly an unjustified land boom, although it might have been in steady progress for several years.

Speaking generally, therefore, the object sought has been to use fair unit prices prior to the war.

Taking up now the various items in order, the following brief statement may be made:—

(2) Right of way and station grounds.

(3) Real estate.

The unit prices for right of way were determined after inquiry made by the field engineers from all available sources, including assessors, real estate dealers, local residents, and railroad employees. A special engineer, Mr. N. Cauchon, was charged with the investigation of this subject at the larger cities and towns, including Montreal, Toronto, Ottawa, Winnipeg, and Port Arthur. At Edmonton, Calgary, and Vancouver, the field engineers made special investigations on these matters. Assessed valuations were obtained where practicable and compared with estimates received from other and independent sources.

The valuation of real estate has probably provoked greater discussion than any other in connection with valuation matters. Undoubtedly, much of the real estate now owned by the Canadian Northern Company was procured at a very low price. Nevertheless it is now very valuable, and in an estimate of the cost of reproduction its present value should be taken. At any rate, it has been taken. Of course, it may be objected to this, that the increase in value that has taken place since the original purchase has been due to the presence of the railroad, and that the whole idea of estimating the cost of reproduction by supposing the railroad to be removed, while other conditions, many of which are due to the presence of the railroad, remain the same, is an imaginary and impossible assumption. This is undoubtedly true; if the railroad were not in existence, property values would not be what they are, having been largely created by the railroad.

However no other method seems practicable. If the increase in real estate values, which applies to private properties as well as to railroad property, has been caused by the presence of the railroad, it may be urged that the railroad should not be deprived, in a valuation of its property, of the benefit of values which itself has brought about. It is true that the original cost was much less, but we are not estimating original cost. Here is one of the cases in which confusion between the two bases of value has frequently arisen and has rendered results misleading. It must be carefully observed, however, that in estimating the cost of reproduction although the railroad is supposed removed, it is not reasonable to assume that all other conditions remain in their present condition. Certain elements which would be clearly different if the railroad were removed, must be assumed to be different. For instance, alongside of a railroad in a farming or fruit district, a factory or canning establishment may have later sprung up, occupying land on both sides of the track, perhaps with buildings and sidings on both sides of the track, possibly with connections or pipes between the buildings, either over or under the track. Just back of the factory may be farm lands. Now in estimating the cost of reproducing that line, although the line must be taken in its actual present position, the right of way along these factory sites should not be estimated on the basis of manufacturing land, but as farm land. The factory followed the railroad, and was put where it is because the railroad was where it is. If the railroad had been 100 or 1,000 feet away, the factory would have been 100 or 1,000 feet away, alongside the railroad. If, however, the factory had *preceded* the building of the railroad, and the latter had been laid out *through the factory property*, then the right of way there should be based on the value of the land for manufacturing and not for farming purposes. This is another illustration of the fact that in estimating cost of reproduction, that reproduction must be assumed to be carried out essentially in accordance with the actual historical development of the property. It is not possible,

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however, to always carry this principle through consistently, particularly in the case of an old road. A road built fifty years ago through a city, may have really determined the character of the right of way along its line. It may be at present of poor quality, with cheap lodging houses, while a mile away may be an expensive and exclusive residence district. If the railroad had been located a mile away, these districts might have been interchanged. Nevertheless, such transposition cannot be assumed in the valuation. This is one of the difficulties of the reproduction method, which like all methods, must be applied with judgment and good sense, carrying underlying principles as far as they are fairly applicable, and no farther.

I believe it justifiable, therefore, in an estimate of the cost of reproduction to estimate real estate values as at present existing, even though they are far below or in excess of the original cost, and have been brought about in some degree by the presence of the railroad. This, at all events, gives a consistent result, and, if criticized, it can be only, as already explained, on the ground that the real value may be neither the first cost nor the cost of reproduction, and that both elements may have to be considered in determining what that real value is.

Multiples for real estate value.—It has been customary in many valuations, after determining the fair price of real estate per acre or per foot, based on the value of surrounding lands for the purpose for which such lands are used or available, to multiply such values by a certain factor, varying according to circumstances, to obtain the figures to be used in estimating the value of the railroad property. The use of these so-called multiples is based upon the fact that when a railroad company buys property, requiring it in a continuous strip for right of way, and in particular locations, and of particular shapes for stations or terminals, it is as a rule, necessary for the company to pay a higher price,—and sometimes a very much higher price—per unit of area, than the land would be worth for the same purposes for which adjoining property is used. In buying right of way a railroad company crosses numerous parcels of property belonging to different owners, taking portions of each estate. Such takings may damage the remainder of the estate, as for instance, where the right of way separates a farm into two portions, or where it comes between a man's house and his barn, or where it destroys his well. Furthermore, even the presence of the railroad with its noise and smoke may be a real damage to the property. If a railroad company takes one acre from a farm of ten acres, the owner claims compensation much greater than one-tenth the value of what he would take for his entire farm, and in general, it is right that he should be paid more. In other words, the railroad company has to pay not simply for the land, but for consequential or severance damages to the remaining land.

Moreover, it is practically certain that in laying out a railroad there will be buildings on some of the right of way which will have to be moved or destroyed, for which of course the railroad company must and should pay. The fact that such additional cost cannot be estimated with accuracy, is no argument against its inclusion. The additional cost would unquestionably exist by the first cost method and should reasonably be allowed for by the reproduction method. That this is true will be perfectly obvious from the following illustration: In building its terminal in New York City, the Pennsylvania railroad was obliged to purchase several entire blocks, with the buildings upon them, paying, of course, not only for the land but for the buildings. The latter were immediately destroyed and the terminal building erected. Now, in the case of a new property like this, the original cost and the cost of reproduction will be identical. The first cost would, of course, include the cost of the buildings which had been destroyed and which find no place in the inventory of the property. If, therefore, by the cost of reproduction method, the land is simply taken at its value or cost, the value of this piece of property is much underestimated.

Sometimes, too, an owner will "hold up" a railroad company, demanding an extremely high price for a small parcel, and juries in such cases are often liberal

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towards owners in awarding damages. It is also unquestionably right that if a man's property is taken away from him against his will, he should be paid a sum which under no circumstances would be *less* than its fair value, and which, therefore, would generally be *more* than its fair value. Moreover, if a portion of a man's land is taken, it is easy to see that the value of the remaining land may be much less than in the proportion which its area bears to the total original area. If a railroad takes half my farm, the remainder may be worth nothing to me. Frequently the fair damages for the taking of a portion of a piece of property would be greater than the value of the entire property. This is well recognized in the principle which allows no excess condemnation of lands for public improvement in cities.

Since the decision of the United States Supreme Court in the Minnesota Rate Cases, June 9, 1913, the situation with reference to the valuation of real estate and right of way in an estimate of the cost of reproduction, has been quite uncertain. The court said:—

"Assuming that the company is entitled to a reasonable share in the general prosperity of the communities which it serves, and thus to attribute to its property an increase in value, still the increase so allowed, apart from any improvements it may make, can not properly extend beyond the fair average of the normal market value of land in the vicinity having a similar character. Otherwise we enter the realm of mere conjecture. We therefore hold that it was error to base the estimates of value of the right of way, yards, and terminals upon the so-called railway value of the property. The company would certainly have no ground of complaint if it were allowed a value for these lands equal to the fair average market value of similar land in the vicinity, without additions by the use of multipliers, or otherwise, to cover hypothetical outlays. The allowances made below for a conjectural cost of acquisition and consequential damages must be disapproved; and in this view we also think it was error to add to the amount taken as the present value of the lands the further sums calculated on that value which were embraced in the items of "Engineering," "Superintendence," "Legal Expenses," "Contingencies," and "interest during construction."

This statement, however, may be considered to be merely a disapproval of the cost of reproduction as the real value, and not as implying that in an estimate of the cost of reproduction no multiples should be used. Certainly an estimate of value should be one thing or the other—either the cost of the reproduction (with or without the deduction of depreciation, according to circumstances) or the original cost (with or without depreciation). The true value is to be determined by the court or other determining agency on the basis of estimates, and these estimates should be either the original cost or the cost of reproduction. In estimating the cost of reproduction, it is perfectly clear that the right of way should be taken as of greater value than merely that of adjoining lands, because such value would be less than it would cost to reproduce the property, since consequential and severance damages ought to be paid and would have to be paid, in addition to a higher price for the land itself than the value of adjoining lands, for the reasons: (1) that it is taken from the owner without his consent, and (2) that only a part of his property is taken and the value of the remainder impaired.

The above considerations indicate clearly, to my own mind, at least, that the reproduction value of land must necessarily include some factor or multiple by which the fair value, if based upon the value of adjoining lands, should be multiplied. If the original cost is obtained, that original cost will surely include such multiple. What the multiplier should be is uncertain, and there is nothing to determine it except judgment and experience. Instances of actual lines which have been constructed in the United States through farming districts, have shown that the railroad company has paid for

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its right of way on the average, four or five times the fair value of adjoining land for farm purposes. In cities and towns also, a railroad company taking land by right of eminent domain, must, as a rule, pay in excess of its fair value; the multiple, however, being different from that in the case of farm lands.

In the present estimate, therefore, I have continued to use multiples for real estate values. If your Board should consider them unjustifiable, the estimate may easily be modified accordingly. The multiples which I have used are moderate, and much less than those which have been used in some other valuations. For the major portion of the right of way, the multiple has been two; in other words, the unit price of the right of way has been taken as twice the value of adjoining lands for the purposes for which such lands are used or available; while in cities and towns the multiple has been one and one-quarter; in other words, the value of the land has been taken at 1.25 of the value of adjoining property for the purposes for which such property is used or available. In some cases, as in large cities where special investigations were made, no specific multiples were used; or, to express it in another manner, the figure given as the fair value includes the multiple, and is our estimate of what the company would have to pay, without obtaining that figure by taking another figure and multiplying it by a factor.

Items 4-17.—The unit prices for grading of the various classes, clearing, grubbing, tunnels, bridges, ties, rail, frogs and switches, track fastenings and other material, ballast, track laying and surfacing, roadway tools, fencing, crossing and signs, interlocking, and telephone and telegraph lines, were determined after careful consideration and from comparison with actual contract prices, consultations with Messrs. Kellett and Johnston, as heretofore explained, discussions with the members of the engineering staff, comparison of data obtained by the field engineers, consideration of charges for freight, unit prices at mills, location of ballast pits, and indeed all pertinent information which was available. These unit prices were varied on different lines with due regard to local conditions, and the historical development of the property. In other words, a line built through a territory already occupied by another line, would have certain unit prices lower than those for the latter line, which, when built, had to construct its own roads, often through difficult ground, for transfer of materials and supplies. For this reason some of the unit prices for the Canadian Northern lines in territory through which the Grand Trunk Pacific had previously been built, have been taken somewhat lower than corresponding prices for the Grand Trunk Pacific. The endeavour has of course been made to arrive at unit prices which were fair and while perfection in this respect cannot be obtained, it is believed that the prices used can be subject to but little criticism.

Items 18-31.—A special engineer or architect was employed to examine the standard plans of all structures, except bridges and culverts, and to prepare estimates of the cost of reproducing the same. This engineer, Mr. Horner, visited many of the important points on the line, checking up the standard plans and informing himself with reference to unit prices, and finally made complete estimates of cost of all the standard structures.

There is but one grain elevator owned by the Canadian Northern System, namely, that in Port Arthur. This is an elaborate structure, said to be the finest and most complete grain elevator in the world. Its cost was estimated by Mr. C. D. Howe, consulting engineer and former student of the writer, and until within two years engineer for the Board of Grain Commissioners of Canada. Mr. Howe's experience, extending through a number of years in the design and construction of structures of this kind, in which he has probably had as great experience as any man in Canada, made his opinion as to the cost of reproduction of this elevator very interesting. His estimate was about 12 per cent greater than the cost as reported by the company, substantiating, therefore, to this extent, Mr. Horner's estimates for other structures which ran from 10 to 25

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per cent in excess of the costs submitted by the company. This excess was due, no doubt, to increased prices since the structures were built, and the fact that many of the structures were built by the railroad company, which made no charge on its books for haulage of material.

In addition to the numbered items on the Typical Unit sheet, two other items have been added which should be explained, namely: "Maintenance and Temporary Work During Construction," and Solidification and Adaption," or "Deferred Construction."

Maintenance and Temporary Work During Construction.—A contractor for a portion of a railroad line has to lay and maintain track until it is accepted by the company. After it is accepted, it will probably be used for some time for the transportation of materials, etc., to sections lying beyond. For this purpose it has to be maintained by the railroad company at a cost greater than the average cost of maintenance of a line after the grading has come to a state of equilibrium. The cost of such maintenance should fairly be charged to the cost of the work. It is an operating expense that is not met by any corresponding revenue. In the present valuation an allowance of \$250 per mile has been made for this item.

"Solidification and Adaptation": in other words "Deferred Construction."—After an entire line is put into operation, its maintenance will be more costly for a term of years than later, because for a certain period there is a settlement of embankments, a washing-in of the slope in cuts, a filling up of ditches, and other sources of expense, which disappear after a term of years when the work has reached a state of equilibrium; that is to say, a railroad line after being put into operation would soon show an undulating profile due to the settling of the fills, and such sags have to be taken out by raising the track and putting in new material. Oftentimes the ballast is lost in this way, as new earth has to be put in above existing ballast, and new ballast on top of that.

This item is a proper charge to construction. Its amount, like all others, is uncertain. In the valuation of the railroads of Minnesota in 1908 the engineer's report allowed a total of nearly \$12,000,000 for this item out of a grand total, not including equipment, of about \$339,000,000, or, about $3\frac{1}{2}$ per cent of the total. Explained otherwise, the allowance for this item was nearly \$1,200 per mile. The proper amount of this item should vary with the amount of grading, increasing with the amount of earth-work. It should also vary to a certain extent, with the length of the line, independent of the amount of earth-work. In other words, the charge per mile should be a constant plus a certain fraction of the cost of grading. After careful consideration, the formula $\$200 + \frac{1}{60}$ of the cost of grading, has been generally adopted for this item. It gives results much lower than those used in Minnesota, and lower than those which have been used in many other valuations, and very likely it is too low. For a light prairie line, where the grading costs about \$4,500 per mile, this item therefore amounts to \$350 per mile, while for a mountain section, where the grading amounts to \$45,000 per mile, it would amount to 1,700 per mile. This latter would seem to be too much, for the reason that in such sections the fills would be largely of rock, and the settlement would be less than in the case of earth. The formula was therefore modified according to local conditions, and in some cases was made $\$200 + \frac{1}{60}$ of the cost of grading. Like the other elements of a valuation, it is incapable of exact determination. The main point is, that it was taken as \$200 per mile plus a varying fraction of the cost of grading. I am convinced that our total allowance for this item is low.

It should be added that where the field examination of a line showed the sags had not been taken out, or ditches kept open—in other words, that the expenditures contemplated by this item subsequent to completion of the line had not been made—the item was either not included at all or reduced to such amount as the field engineers considered proper.

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II. Grand Trunk Pacific Railroad.

In the valuation of the Grand Trunk Pacific Railroad, inasmuch as the quantities had been estimated and officially approved by the Government through its consulting engineer, Sir Collingwood Schrieber, were on file, these quantities were assumed in our estimate as correct. There was no occasion for us to go over work which had already been done by another branch of the Government, and without doing so we were of course not in a position to criticize the results obtained.

With reference to unit prices, however, we used figures which we considered reliable, without any reference to those which had been paid, although the latter were available. It was found that in the construction of the Grand Trunk Pacific, the work had been let in sections, and that the unit prices for the same items, even in adjoining sections, varied substantially from each other. This of course was to be expected, and resulted, in some cases from a desire on the part of the contractor to substitute his own judgment, with reference to estimated quantities, for the preliminary estimates of the engineers. I understand that bids for each section were let on the basis of the total cost, computed on preliminary estimates of quantities. Such a preliminary estimate, for instance, might have shown 500,000 cubic yards of earth excavation, and 50,000 cubic yards of rock excavation. After examining the ground, however, the contractor might have come to the conclusion that the amount of rock excavation would much exceed the estimate, while the amount of earth excavation would be much below the estimate. He might, therefore, bid a low price for earth and a very high price for rock, and yet be the lowest bidder on the basis of the estimated quantities; and if his judgment as to the relative amounts of earth and rock should prove correct, he might make a very large profit, since he would be paid the amounts bid per cubic yard for the actual quantities excavated.

Furthermore, I was informed that in certain contracts on this line, the prices had been changed after the contracts had been let, and that these prices had been made retroactive. Apparently the conduct of the work itself was not under Government supervision, although the Department of Railways, as previously stated, estimated and approved the total quantities paid for.

The unit prices for the Grand Trunk Pacific were therefore fixed, in the present estimate, in the same manner as for the Canadian Northern, sometimes varying from the latter, however, even in the same district, on account of local conditions or historical development.

OVERHEAD CHARGES.

The elements of value which have been referred to hitherto, represent only the physical elements of the property. In addition to these, however, there are other elements, involving costs which are just as tangible as the cost of the physical elements, namely, the so-called overhead charges, which include contingencies, engineering, legal expenses, promotion, organization and administration, interest during construction, taxes and insurance during construction, commissions or cost of financing and securing the necessary capital. These are all proper and necessary expenses and must be incurred. They would, therefore, enter into the first cost and should be included in an estimate of the cost of reproduction.

(a) *Contingencies*.—This item covers, in general, all uncertainties in the estimates of quantities and unit prices. It is unavoidable that in making an inventory of a property some items will be left out, perhaps because they are unseen or underground. There are also uncertainties of many kinds, as for instance, with reference to the foundations of bridges, in which case the character of the underlying soil, the method of constructing the foundation, and even the dimensions may be uncertain unless original plans are available.

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Again, accidents of greater or less seriousness are practically certain to occur in connection with any work, involving costs of greater or less magnitude. Furthermore, temporary structures may be required during the construction and large quantities of material may be used in fills over soft ground which no inventory or surface examination would disclose. There are many instances of this on the lines which we have considered, where so-called muskegs have caused large expense which is not included in the valuation of tangible or visible items. Liberal allowances have been made for muskegs and other cases of hidden quantities, and these allowances together with the allowance for contingencies, in my opinion, fully cover these uncertainties.

If the valuation of a property is based upon an inventory of those things only, which can be seen or discovered from original plans, it is almost certain to be too low. Suppose, for instance, that fifty years from now a valuation should be made of the Quebec Bridge. The 10,000 tons of steel lying at the bottom of the river would not be observed and perhaps would be forgotten. Accidents for which nobody can be blamed are likely to occur, and represent a certain or uncertain cost which is always included in the total.

It is sometimes argued that no allowance for contingencies should be made in the valuation of an existing property, although such allowance is reasonable in an estimate of cost made before the property is constructed. My own opinion is that an allowance for contingencies is probably more justified in the former case than in the latter, although it is fully justified in both.

The amount of this allowance should vary with the complexity of the property, its character, the possible uncertainties in the valuation, and other elements. In the present valuation I have allowed for contingencies, 5 per cent on the Canadian Northern lines for the Prairie Division, 6 per cent on the lines east of Port Arthur, where there are more uncertainties, and 2 per cent in British Columbia where the actual pay quantities were known and were assumed in this valuation.

On the Grand Trunk Pacific, inasmuch as the actual pay quantities were assumed, the allowance for contingencies was 2 per cent in the Mountain section and 3 per cent in the Prairie section.

(b) *Engineering*.—This includes the making of all preliminary investigations and plans, as well as the final plans, and the engineering supervision of all construction and other work.

The probable allowance for this item is, of course, like the others, very variable, depending upon the difficulty, character and extent of the work. For a railroad in a mountainous region, the actual cost of engineering would be much greater than for a railroad in a Prairie region, but on account of the greater cost of the former line per mile, it might be a smaller percentage of the total cost. On large undertakings the percentage for engineering will generally vary between 5 and 10 per cent.

In the present valuation it has been taken at 5 per cent for the Canadian Northern on the Prairie Division; 6 per cent on the main lines east of Port Arthur; 5 per cent on branches; and 5 per cent in British Columbia, the percentage here being less than on lines east of Port Arthur, on account of the much larger cost per mile of the line in British Columbia. In other words, on the Prairie lines we have allowed for engineering about \$1,000 per mile and on the Rocky Mountain section about \$3,500 per mile.

On the Grand Trunk Pacific it has been assumed at 5 per cent throughout.

(c) *Legal Expenses*.—This item includes the salaries and expenses of law officials, costs of litigation, and any other legal expenses which may be incurred. It may be a very small item or a very large one, depending upon the character of the property and the circumstances attending its construction. This item does not include the cost of acquiring land, which is included in the valuation of right of way and real estate. In this estimate legal expenses have been assumed at one per cent.

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(d) *Promotion, Organization and Administration.*—The cost of promotion is certainly a proper charge against an undertaking. It is necessary for some one to take the initiative, and procure the necessary information, interest financiers and others, and so initiate the work. Next comes the cost of organization, which includes the incorporation and organization of the company, the securing of franchises and similar steps, all of which cost money. After the organization of the project is its administration throughout the period of construction, including salaries for general officers, agents, accountants, clerks, and all other employees not included in the engineering and legal departments, and all administration expenses for materials, stationery, printing, travelling, etc.

In the present valuation this item has been assumed at one per cent, except in both lines in British Columbia, where it has been taken as three-fourths of one per cent.

(e) *Taxes and insurance during construction.*—Certain expenditures are necessary under these heads. In the present valuation, in the absence of more definite information, they have been assumed as one per cent, and one-half per cent in British Columbia and on branches in the East.

(f) *Interest during construction.*—An important overhead charge is the interest on money borrowed or invested in the property during the period of construction. It is unquestionably a proper charge. Its amount involves an assumption as to the rate of interest and the period of construction. The rate of interest must be that which would be charged in the case of a new company, and not the rate which the same company could command after its success and credit has been established.

In the present valuation the interest rate has been assumed at 6 per cent and the period has been varied, as shown in the tabulation of overhead charges which follows.

(g) *Commissions.*—The cost of financing and securing the necessary capital with which to carry out the enterprise is a necessary cost. This does not include discount on securities, which I do not regard in general as a proper overhead charge, but simply as an adjustment of interest, which should be amortized after the completion of the work.

If a company sells its 5 per cent long term bonds at 80, it could probably sell its 6.5 per cent bonds at par. If it adopts the former course, the fact that it receives only \$8 in cash for every \$10 par value of securities, has nothing to do with the valuation of the property. In the case of any given company at a given time, the total annual charge involved in a bond issue, for interest and amortization will be very nearly the same, no matter what the interest rate carried, the term and the price at which the bonds are sold. If fifty year 5 per cent bonds are sold at 80, the investor, assuming that he holds the bonds to maturity, may be said to receive 6.25 per cent interest, plus a sum which, if contributed annually and put at interest, will amount to \$20 in fifty years, or something like 0.25 of one per cent, a total of about 6.5 per cent. At all events, the company, if it provides for amortizing the discount, as it should, will provide this sum out of earnings. During the fifty years, if the credit and financial stability of the company remain good, the price of the bonds should gradually rise to par. Under the same circumstances, 6½ per cent bonds should bring par. The company has the option of issuing bonds at par, or lower rate bonds at a less price; in either case, if provision is made for amortizing the discount, as should be made, the total charge for interest will be the same, no matter what the rate of interest or discount. If bond discount were allowed in the physical valuation, the company might boost the value of the property to almost any extent, without increase of annual interest charge, simply by selling securities at a discount.

It is not intended to question the fact that it is frequently wise to sell bonds at a discount, nor, that it is sometimes desirable to give shares of stock as a bonus with

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a block of bonds. Such transactions, however, are merely part of the methods of financing, and have no bearing on the physical valuation.

It is proper, however, to charge a fair percentage to cover the expenses of interesting financiers, paying for such examination or investigation as they may desire to make before underwriting and the proper expense of marketing the securities. In the present valuation the allowance for commissions has been taken at 3 per cent. While this may be generally low for a new property, yet in this case I think it ample, considering that the bonds in this case carried a Government guarantee.

Some of these overhead charges apply not only to the valuation of the physical elements, but to some of the other contingencies. For instance, the cost of engineering is a percentage of the cost of the work including contingencies; the charge for interest is for interest on the money expended, not only for the physical items, but for contingencies, engineering, etc. The charge for commissions is a certain percentage on the total amount of capital invested in the property, including all other overheads and, indeed, including itself.

These overhead charges can only be estimated approximately, and they would undoubtedly vary in the same property depending upon the date of construction, or the engineer in charge, or the promoter, or the fiscal agent. All that can be done in a valuation is to allow reasonable amounts. The total of these overheads, however, amounts to a considerable sum, so large as to be surprising to those who have not given attention to this phase of the question, or who have the idea that a property only costs what is necessary to pay for steel or concrete or land or other physical property.

The following tables show the method by which the overhead charges in the present valuation have been determined, and the percentage used.

In these tables, unity (1) represents the total estimated cost of reproduction of the physical items, without any allowance for overhead charges. If 6 per cent is allowed for contingencies, then the total, with this allowance, will be 1.06: If 6 per cent is allowed for engineering, this 6 per cent is computed on the total with contingencies, namely, 6 per cent of 1.06, which equals .0636, which, added to the previous total (1.06), gives a total, including contingencies and engineering, of 1.1236. In this manner the total overhead charge has been computed.

On the Prairie Division, where the grading was less, and where there were not so many hidden or uncertain items, allowance for contingencies was taken less than in the Eastern Division, where there were more muskegs and generally greater uncertainty.

The principal item of overhead charge is interest. In order to estimate this, a programme of construction had to be assumed. We assumed that the main line would be constructed in three years, and that the payments would be made practically uniformly throughout that time. The interest charge would, therefore, be an average period of one and one-half years on the whole expenditure. We assumed the interest rate at 6 per cent, making the total interest charge 9 per cent on the entire expenditure including previous overheads listed in the table. For Branch Lines, we assumed that the period of construction would be one and one-third years, or practically two working seasons, making the aggregate period two-thirds of a year, which at 6 per cent would make the interest charge 4 per cent on the total cost, including previous overheads.

With reference to the land values which we have allowed in our estimate of the cost of reproduction, it has already been explained that, for the right of way in general, we allowed double our estimated value of adjoining lands. To this has been added, for overhead charges for the main line, 24 per cent. Our estimate, therefore, of the cost of reproduction, is practically two and one-half times our estimate of the fair normal value of adjoining lands. In cities we have allowed for the cost of reproduction, about 25 per cent in excess of the value of adjoining property which, with the addition of 24 per cent for overhead charges, makes our estimate of the cost of reproduction 1.55 times the fair normal value of adjoining property.

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There is no question, in my mind, that our estimate of the cost of reproduction of the right of way and real estate is liberal, and not fairly open to criticism as being too low. If anything, I believe it is high. It must be borne in mind, however, that this estimate includes all costs of acquisition, including damages, and it is intended to be an estimate of what it would cost to acquire these properties under normal conditions. It must be borne in mind also, that much of this right of way when the railroad was constructed, was in undeveloped territory of little value; and, indeed, that much of it is still of very small value.

CANADIAN NORTHERN RAILWAY.

Eastern Division, Main Line, East of Port Arthur.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. On all items except land—	
(a) Contingencies, 6 p.c.	1'06
(b) Engineering, 6 p.c. on 1'06	1'1236
(c) Legal, etc., 1 p.c. on 1'06	1'1342
(d) Administration, 1 p.c. on 1'07	1'1449
(e) Taxes, say 1 p.c.	1'1549
(f) Interest, 3-year period, say, 9 p.c. on 1'1549	1'2588
(g) Commissions, 3 p.c. on 1'2588	1'2966
Say, 30 p.c.	
B. On land—	
(a) Administration, etc., 1 p.c.	1'01
(b) Taxes, 3 years at $\frac{1}{2}$ p.c.=1 $\frac{1}{2}$ p.c.	1'025
(c) Interest, 3 years at 6 p.c. equals 18 p.c. on 1'025	1'2095
(d) Commissions, 3 p.c. on 1'2095	1'2458
Say, 24 p.c.	

CANADIAN NORTHERN RAILWAY.

Prairie Division, Main Line.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. On all items except land—	
(a) Contingencies, 5 p.c.	1'05
(b) Engineering, 5 p.c. on 1'5	1'1025
(c) Legal, etc., 1 p.c. on 1'05	1'1130
(d) Administration, 1 p.c. on 1'06	1'1236
(e) Taxes, say, 1 p.c.	1'1336
(f) Interest, 3-year period. Average 1 $\frac{1}{2}$ years at 6 p.c. equals 9 p.c. on 1'1336	1'2356
(g) Commissions, 3 p.c. on 1'356	1'2727
Say, 27 $\frac{1}{2}$ p.c.	
B. On land—	

As on Eastern Division, main line, 24 p.c.

NOTE: Special terminal appraisals made by special engineer include all overheads.

CANADIAN NORTHERN RAILWAY.

Eastern Division, branch lines east of Port Arthur.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. On all items except land—	
(a) Contingencies, 6 p.c.	1'06
(b) Engineering, 5 p.c. on 1'06	1'113
(c) Legal, 1 p.c. on 1'06	1'1236
(d) Administration, 1 p.c. on 1'07	1'1343
(e) Taxes, $\frac{1}{2}$ p.c.	1'1393
(f) Interest, $\frac{1}{2}$ (1-year period), say 4 p.c. on 1'1393	1'1849
(g) Commissions, 3 p.c. on 1'1849	1'2204
Say, 22 p.c.	
B. On land—	
(a) Administration, 1 p.c.	1'01
(b) Taxes, 1 year at $\frac{1}{2}$ p.c.	1'015
(c) Interest, 1 year at 6 p.c., 6 p.c. on 1'015	1'0759
(d) Commissions, 3 p.c. on 1'0759	1'1082
Say, 11 p.c.	

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CANADIAN NORTHERN RAILWAY.

Prairie Division, branch lines.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. On all items except land—	
(a) Contingencies, 5 p.c.	1'05
(b) Engineering, 5 p.c. on 1'05.	1'1025
(c) Legal, etc., 1 p.c. on 1'05.	1'1130
(d) Administration, 1 p.c. on 1'06.	1'1236
(e) Taxes, say 1 p.c.	1'1336
(f) Interest, 1-year period; $\frac{1}{2}$ year at 6 p.c. equals 3 p.c. on 1'1336 say 4 p.c. on 1'1336.	1'1790
(g) Commissions, 3 p.c. on 1'1790.	1'2143
Say, 21'5 p.c.	
B. On land—	
(a) Administration, etc., 1 p.c.	1'01
(b) Taxes, 1 year, $\frac{1}{2}$ p.c.	1'015
(c) Interest, 1 year, 6 p.c. on 1'015.	1'076
(d) Commissions, 3 p.c. on 1'076.	1'108
Say, 11 p.c.	

CANADIAN NORTHERN RAILWAY.

In British Columbia.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. On all items except land—	
(a) Contingencies, 2 p.c.	1'02
(b) Engineering, 5 p.c. on 1'02.	1'071
(c) Legal, etc., $\frac{3}{4}$ p.c. on 1'02.	1'0787
(d) Administration, $\frac{3}{4}$ p.c. on 1'0275.	1'0864
(e) Taxes, $\frac{1}{2}$ p.c.	1'0914
(f) Interest, 3-year period equals average $1\frac{1}{2}$ year, 9 p.c. on 1'0914	1'1896
(g) Commissions, 3 p.c. on 1'1896.	1'2253
Say, 23 p.c.	
B. On land—	
(a) Administration, $\frac{3}{4}$ p.c.	1'0075
(b) Taxes, 1 p.c.	1'0175
(c) Interest, 3-year period, 18 p.c. on 1'0175.	1'2006
(d) Commissions, 3 p.c. on 1'2006.	1'2366
Say, 23 p.c.	

GENERAL REMARKS.

From the foregoing description of the methods of valuation employed and the time allowed for the work, it may perhaps be inferred that the results are so inaccurate as to be unreliable. I do not, however, consider such to be the case. There are undoubtedly certain elements of these properties, for the accurate estimation of which additional time would be desirable, and our figures would undoubtedly be modified if a more thorough study could be made. Such, for instance, is probably the case with some of the real estate values, and certain lines which it has not been possible for us to examine with the care which would be desirable. However, I am convinced that Mr. Cauchon, who has estimated the real estate values in the large eastern terminals, as well as the field engineers who have estimated right of way and the western terminals, have handled their work with great skill and discrimination, and with the sole desire of arriving at the truth, and I feel well satisfied with their results.

On the whole, I long ago became convinced of the fact that in making a physical valuation it is not desirable to go into extreme detail, in view of the many sources of inaccuracy, and the impossibility in any case of arriving at an exact result, and the

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further uncertainty, after the final valuation has been completed, as to what the courts or determining body will decide to be the fair value. Many people delude themselves with the idea that a lot of figures necessarily means exactness. In this as in other computations, much depends upon the skill and good judgment with which the work is carried on and the various prices and percentages determined, and if skill and good judgment are exercised, while individual results may be largely in error, such errors will largely compensate each other in the total, and the final result may be very close to the truth.

The present valuation has afforded several remarkable instances of such agreement, which may be mentioned.

1. On the Canadian Northern Railway, the section from Rideau Junction to Current, a distance of 595 miles, was established by us on the basis of our field inspection. After our final figures had been obtained, it was learned that the Government Department of Railways and Canals had upon its books official figures for this line. The following table gives a comparison of these figures. It will be observed that our total cost, including contingencies, representing the cost of reproduction of the physical elements without overheads, was four-tenths of one per cent in excess of the figures given by the Department of Railways and Canals, the actual difference being but \$125,571 out of a total of nearly \$34,000,000.

Our estimate of engineering was slightly less than the actual figure on the books of the department, and our estimate of interest during construction slightly greater than theirs. Our total cost, excluding legal expenses, administration, taxes and commissions was 2 per cent in excess of theirs. To this we added overhead charges which were not included in their estimate. This is a remarkable agreement, particularly with regard to the physical items, the engineering and in the interest during construction.

CANADIAN NORTHERN RAILWAY.

Rideau Junction—Current, 895 miles.

Comparison of estimate made by the Commission of Inquiry from field inspection with statements by the Department of Railways and Canals taken from the Canadian Northern Railway Company's books and final estimates of May, 1916.

	TOTAL.		Difference.	PER MILE.		Dif- ference.	Per cent.
	Commission of Inquiry.	Department Railways and canals.		Commission of Inquiry.	Department Railways and Canals.		
	\$	\$		\$	\$		
Basic cost.....	31,875,930	33,284,810	-1,629,880	35,615	37,190	-1,575	-4
Contingencies.....	1,916,505	382,654		2,141	427		
Subtotal No. 1.....	33,792,438	33,666,864	+ 125,571	37,756	37,617	+ 139	+4/10
Engineering.....	2,031,495	2,380,973		2,270	2,660		
Subtotal No. 2.....	35,823,930	36,047,837	- 223,907	40,026	40,277	- 251	-6/10
Maintenance and deferred Construction.....	896,790	As me none		1,002	.....	
Subtotal No. 3.....	36,720,620	36,047,837	- 672,783	41,028	40,277	- 751	+ 2
Interest during construc- tion.....	3,442,380	3,254,143		3,846	3,635		
Subtotal No. 4.....	40,163,000	39,301,980	+ 861,020	44,874	43,912	+ 962	+ 2
Other overhead charges..	2,391,678	248,375		2,672	277		
Grand total.....	42,554,678	39,550,356	+3,004,323	47,546	44,189	+3,357	+ 8

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Contingencies—Commission of Inquiry gives 6% on basic cost, less land; Department of Railways and Canals' item consists of difference between total ledger cost and cost computed on unit price basis.

Interest during Construction—Commission of Inquiry give 9% ($\frac{1}{2}$ 3-year period at 6%) on Subtotal No. 3 plus legal and Administration Expenses. Department of Railways and Canals give ledger cost.

Engineering—Commission of Inquiry gives 6% on Subtotal No. 1, less land; Department of Railways and Canals give ledger cost of same.

Maintenance—during and *Deferred Construction*—Commission of Inquiry give:

Maintenance during Construction.. \$ 250

Solidification and Adaptation, \$200

plus 1/30 grading cost..... 752

Per mile \$1,002

Department of Railways and Canals do not include anything for this item.

Other Overhead Charges—

Legal Expenses.. . . . 1% on Subtotal No. 1,

Administration... . . 1% on " No. 1 plus Legal Expenses.

Taxes... . . 1% on basic cost.

Commission... . . 3% on Subtotal No. 4.

CANADIAN NORTHERN RAILWAY SYSTEM—CANADIAN NORTHERN ONTARIO RAILWAY.

Rideau Junction—Current, 895 miles.

Comparison of estimate made by the Commission of Inquiry from field inspection with statements by the Canadian Northern Railway Valuation Summary Sheet of December 30, 1916.

	Commission of Inquiry.	Canadian Northern Railway.		
		Gross.	Deduction.	Adjusted.
	\$	\$	\$	\$
Rideau Junction—Pembroke.....		4,655,010		
Deduct cost of road			134,199	
Deduct discount..			262,228	4,208,583
Pembroke—Capreol		12,394,001		
Deduct cost of road.....			498,937	
Deduct discount.....			710,295	11,184,769
Capreol—Ruel		2,042,078		
Deduct cost of road			110,562	
Deduct discount.....			165,939	1,760,177
Ruel—Current.		28,102,045		
Deduct cost of road			1,158,720	
Deduct discount.....			1,738,673	55,204,652
	42,554,678	47,193,734	4,835,553	42,358,181

2. Subsequently to this comparison, the Canadian Northern Railway Company submitted its statement of cost of this line. This statement contained two items which we threw out, namely "discount" and "cost of road." The first was probably discount on bonds, which, as above explained, I do not consider a fair charge in a valuation; and the second item, stock given to contractors, which should not be included.

Deducting these two items, our total cost of reproduction was \$42,554,678, while that of the company was \$42,358,181, a truly remarkable agreement. These results are as shown above.

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RESULTS.

1. CANADIAN NORTHERN RAILWAY SYSTEM.

The results of this work for the Canadian Northern Railway System are given in the following tables: Table 1 gives a summary of the various lines in operation and under construction and all other items which have been included in our estimate of the cost of reproducing the property, all being physical elements. Tables 2 and 3 show these results more in detail, with reference to each division or branch of the Canadian Northern Railway System.

TABLE 1.—Estimated cost of reproduction.

Lines in operation.	TOTAL.		C. N. R. PROPORTION BASED ON PER CENT OF STOCK OWNED.		TOTAL.	
	New.	Less De- preciation.	New.	Less De- preciation.	Land.	Interest.
	\$	\$	\$	\$	\$	\$
*Halifax & S. W.	6,614,976	5,298,176	6,614,976	5,298,176	+223,821	549,291
Que. & L. St. J.	11,319,589	9,796,240	10,017,836	8,669,672	1,666,602	364,881
C. N. Sys. Term.	543,986	543,986	543,986	543,986	543,986	.....
C. N. Que. Ry.	16,212,912	14,608,730	9,679,611	8,771,414	2,929,358	1,171,227
C. N. Ont. Ry.	71,118,221	64,713,421	71,118,221	64,713,421	4,068,944	5,573,557
B., W. & N. W. Ry.	754,105	579,038	754,105	579,038	45,414	28,681
Bay of Quinte Ry.	1,199,540	970,518	1,199,540	970,518	42,317	45,052
Cent. Ont. Ry.	3,197,672	2,524,159	3,197,672	2,524,159	143,848	120,688
I., B. & Ottawa Ry.	839,173	636,990	839,173	636,990	11,037	31,163
Duluth, Win. & P. Ry.	8,092,168	6,880,366	4,127,006	3,608,969	1,860,797	280,294
Niag. St. C. & Tor. Ry.	3,088,825	2,749,740	3,088,825	2,749,740	358,864	114,439
C. N. Ry.	142,822,453	122,264,278	142,822,453	122,264,278	26,354,310	7,999,110
N. P. & Man. Ry.	13,232,353	11,619,723	13,232,353	11,619,723	5,849,814	469,452
C. N. Sask. Ry.	1,064,400	867,116	1,064,400	867,116	170,405	40,627
C. N. West. Ry.	8,333,919	7,644,723	8,333,919	7,644,723	139,771	312,554
C. N. Alberta Ry.	12,685,999	11,979,112	12,685,999	11,979,112	174,919	1,045,375
C. N. Pacific Ry.	45,976,455	44,681,158	45,976,455	44,681,158	1,195,844	3,800,890
Total lines in operation.	347,096,746	308,357,474	335,296,080	298,122,193	45,809,451	21,947,291
Lines Under Construction						
Que. & L. St. John.	344,937	344,937	305,269	305,269	41,648	13,701
C. N. Que. Ry.	150,417	150,417	89,799	89,799	3,340	5,702
C. N. Ont. Ry.	17,298,640	17,298,640	17,298,640	17,298,640	9,100,055	835,784
C. N. Ry.	1,252,946	1,252,946	1,252,946	1,252,946	170,465	44,979
C. N. West. Ry.	2,891,878	2,891,878	2,891,878	2,891,878	622,716	103,680
C. N. Sask. Ry.	116,653	116,653	116,653	116,653	37,925	5,037
C. N. Pac. Ry.	19,229,110	19,229,110	19,229,110	19,229,110	11,402,908	1,882,611
Various Loc. Surveys.	71,954	71,954	71,954	71,954	.....	.....
Total lines under construction.	41,356,535	41,356,535	41,256,249	41,256,249	21,379,057	2,891,494
Total railroad lines.	388,453,281	349,714,009	376,552,329	339,378,442	67,188,508	24,838,785
Hotels and lands.	62,068	53,604	54,930	47,440	.....	.....
Elevators.	1,436,625	1,260,261	1,436,625	1,260,261	329,350	.....
Material on hand.	2,955,060	2,680,000	2,955,000	2,680,000	205,000	.....
Industrial spurs.	2,452,618	2,452,618	2,452,618	2,452,618	.....	.....
Canadian Northern Ex- press Co. and Transfer Co.	1,751,392	1,050,835	1,751,392	1,050,835	.....	.....
	330,579	198,347	330,579	198,347	.....	.....
	8,988,232	7,695,665	8,981,144	7,689,501	534,350	.....
Grand total.	397,441,563	357,409,674	385,533,473	347,067,943	67,722,858	24,838,785

*Figures given by Railway Company as shown on letter from Mr. Mitchell, 9th March, 1917, copy of which is attached.

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CANADIAN NORTHERN RAILWAY SYSTEM.

OTTAWA, Ont., March 9, 1917.

W. H. CHADBOURN, Esq.,
Commissioner of Inquiry into
Transportation and Railways,
Citizen Building, Ottawa, Ont.

DEAR SIR,—With respect to the Halifax and South Western Railway, I attach herewith a statement showing the cost of these lines to the company.

The Halifax and South Western Railway was built under agreement with the Nova Scotia Government, by which they advanced \$13,500 per mile of railway, the company giving to the Provincial Government a mortgage over the railway for the amount advanced and for interest on advances during construction. The agreement with the Government provided that the mortgage would be cancelled by payment of \$10,300 per mile; in other words, leaving the company a cash subsidy at the rate of \$3,200 per mile. In 1912 the company arranged with the Government for a new mortgage, under which the total advances of the Government, plus accrued interest, less \$3,200 per mile cash subsidy, were retired by the issue of new 3½ per cent bonds of the company, amounting to \$4,447,000.

In addition to the above, the company received from the Dominion Government cash subsidy of \$1,364,210.93, and expended this, together with a further amount of \$641,231 on the construction of the lines, the total expenditure being as shown on the statement enclosed.

The statements of cost already submitted will furnish you with details of the expenditure.

Yours truly,

A. J. MITCHELL,

Assistant to Vice-President.

Halifax and Mahone.....	68'10
Lunenburg to Middleton.....	71'00
Middleton to Port Wade.....	39'40
Caledonia Branch.....	22'10
Bridgewater to Barrington.....	117'50
Barrington to Yarmouth.....	50'10
Liverpool to Milton.....	4'98
Torbrook Branch.....	4'16
	<hr/>
	377'34
	<hr/>
Total cost of construction of lines.....	\$6,452,441 43
Betterments, etc.....	162,534 28
Cost of road, stock.....	\$1,500,000 00
Less cash subsidy.....	1,364,210 93
	<hr/>
Interest (operating, capitalized).....	\$ 135,789 07
	212,915 37
	<hr/>
	\$6,963,680 15
	<hr/>

NOTE.—Under agreement with Nova Scotia Government, interest to amount of \$878,141.80 was offset by \$823,200, provincial subsidy (257.25 miles at \$3,200 per mile), and balance capitalized.

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TABLE No. 2.—Lines in Operation—Canadian Northern Railway.

Item.	M. L. Mileage.	Total M. L. Mileage.	Estimated Cost Repro- duction.	C. N. R. System Proportion.	C. N. R. Proportion less Depre- ciation.
			\$	\$	\$
Halifax and Southwestern Ry.— 100% stock owned by C. N. R. System....	368·20	368·20	6,614,976	6,614,976	5,298,176
Land.....			\$223,821		
Interest.....			549,291		
Quebec and Lake St. John Ry.— 88·5% stock owned by C. N. R. System—					
Quebec—Chicoutimi.....	227·00		9,387,974		
La Tuque Branch.....	39·00		1,415,942		
Chambord—Roberval.....	12·30		374,575		
Valcartier—Clarke.....	5·40		118,330		
Hotel Junction—Lake St. Joseph....	0·69		22,768		
		284·89	11,319,589	10,017,836	8,669,672
Land.....			\$1,666,002		
Interest.....			364,881		
*Canadian Northern System Terminals, Limited—					
100% stock owned by C. N. R. System—					
In Quebec and Montreal.....			543,986	543,986	543,986
Land.....			\$543,986		
Canadian Northern Quebec Railway— 59·7% stock owned by C. N. R. System—					
Quebec—Montreal.....	176·07		10,731,448		
Rinfret—Huberdeau.....	45·28		1,216,517		
Garneau Junction—Riv. à Pierre...	36·84		859,514		
Montmorency Branch.....	7·22		134,516		
Aldred Junction—Shawinigan Falls..	3·80		152,127		
Paradis Junction—Rawdon.....	15·88		452,557		
Joliette—Hawkesbury.....	67·90		2,666,232		
		355·99	16,212,912	9,679,161	8,771,414 *
Land.....			\$2,929,358		
Interest.....			1,171,227		
Canadian Northern Ontario Ry.— 100% stock owned by C. N. R. System—					
Todmorden—Capreol.....	270·40		10,409,965		
Rideau Junction—Capreol.....	302·00		15,713,729		
Capreol—Current.....	593·00		26,840,949		
Hawkesbury—Hurdman.....	56·52		1,789,570		
Todmorden—Ottawa.....	251·00		12,703,278		
Branches.....	30·71		1,341,558		
Toronto Terminals.....	4·24		2,319,172		
		1,507·87	71,118,221	71,118,221	64,713,421
Land.....			\$4,068,941		
Interest.....			5,573,557		
Brockville, Westport and N. W. Ry.— 100% stock owned by C. N. R. System ..	44·40	44·40	754,105	754,105	579,038
Land.....			\$45,414		
Interest.....			28,681		
Bay of Quinté Ry.— 100% stock owned by C. N. R. System....	54·50	54·50	1,199,540	1,199,540	970,518
Land.....			\$42,317		
Interest.....			45,052*		
Central Ontario Ry.— 100% stock owned by C. N. R. System—					
Pictou—Trenton.....	30·30		510,596		
Trenton—Wallace.....	122·30		2,477,041		
Branches.....	14·40		210,035		
		167·00	3,197,672	3,197,672	2,524,159
Land.....			\$143,848		
Interest.....			120,688		

* All other properties of this company are shown under lines where located.

TABLE No. 2.—Lines in Operation—Canadian Northern Railway—*Continued.*

Item.	M. L. Mileage.	Total M. L. Mileage.	Estimated Cost Reproduction.	C. N. R. System Proportion.	C. N. R. Proportion less Depreciation.
			\$	\$	\$
Irondale, Bancroft and Ottawa Ry.— 100% stock owned by C. N. R. System...	51·90	51·90	859,173	839,173	636,990
Land.....\$11,037					
Interest.....31,163					
Niagara, St. Catharines and Toronto Ry.—					
100% stock owned by C. N. R. System...	61·61	61·61	3,088,825	3,088,825	2,749,740
Land.....\$358,864					
Interest.....114,439					
Duluth, Winnipeg and Pacific Ry.— 51% stock owned by C. N. R. System—					
Duluth Junction—Ranier.....	1·55		131,595		
Ranier—Virginia.....	97·58		2,997,480		
Virginia—Duluth.....	71·43		3,763,374		
Terminal properties.....			1,199,719		
		170·56	8,092,168	4,127,006	3,608,969
Land.....\$1,860,797					
Interest.....280,294					
Canadian Northern Ry.— 100% stock owned by C. N. R. System—					
Port Arthur—St. Boniface.....	436·50		17,070,103		
Winnipeg Terminals.....			13,737,973		
Beaver—Edmonton.....	748·34		20,702,003		
Saskatoon—Munson.....	302·50		2,692,753		
Munson—Calgary.....	97·00		4,995,011		
Regina—East Prince Albert.....	249·59		11,121,981		
Edmonton Yards.....	5·80		5,784,197		
				80,104,021	71,266,296
Twin City Junction—North Lake....	59·15		1,050,027		
Stanley Junction—Kakabeka.....	3·94		122,791		
Emerson Junction—South Junction...	72·69		1,377,760		
Paddington Junction—Victoria Beach	72·88		1,363,535		
Transcona—Dundee.....	4·02		62,606		
Carman Junction—Somerset.....	78·67		1,731,383		
Cardinal—N.D. de Lourdes.....	2·63		39,816		
St. James—Gypsumville.....	158·01		3,060,276		
Greenway—Deloraine.....	80·18		1,539,987		
Grosse Isle—Hodgson.....	80·98		1,264,406		
Steep Rock Junction—Steep Rock....	12·36		186,615		
Arizona Junction—C. N. Junction...	297·09		6,967,825		
Craven Northeasterly.....	6·00		73,570		
Carberry Junction—Brandon Junction	22·85		380,394		
Hartney—Virden.....	37·27		687,091		
Maryfield—Bengough.....	184·35		4,000,465		
Luzton—Estevan.....	25·08		389,831		
Moosejaw Junction—Moosejaw.....	85·67		2,227,374		
Gravelbourg Junction—Gravelbourg.	79·25		1,837,415		
Oakland—Amaranth.....	44·18		653,678		
Neepawa Junction—McCreary Junction	70·41		1,352,384		
Hallboro—Beulah.....	75·43		1,514,350		
Ochre River—End of Steel.....	14·90		234,186		
Rossburn Junction—Ross Junction...	190·57		3,808,420		
North Junction—Prince Albert.....	360·59		6,774,463		
Sifton Junction—Winnipegosis.....	21·06		306,701		
Thunderhill—Preeceville.....	72·90		1,408,341		
Hudson Bay Junction—The Pas.....	88·06		1,594,492		
Melfort—St. Brieux.....	21·91		366,223		
Sturgis Junction—Canora.....	21·44		371,218		
Delisle—Dunblane.....	59·67		1,167,225		
Elrose Junction—M.P. 76·28.....	76·28		1,637,332		
Dalmeny—Carlton.....	36·80		535,376		
Prince Albert—Denholm.....	116·53		1,877,563		
Shellbrook—Big River.....	56·97		948,129		

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TABLE 2.—Lines in Operation—Canadian Northern Railway—*Concluded.*

Item.	M. L. Mileage.	Total M. L. Mileage.	Estimated Cost Reproduction.	C. N. R. System Proportion.	C. N. R. Proportion Less De- preciation.
			\$	\$	\$
C. N. R.— <i>Continued.</i>					
N. Battleford—Turtleford.....	56.74	.....	969,859		
Battleford Junction—Battleford.....	7.91	.....	281,533		
Vegreville—Munson Junction.....	161.30	.....	3,470,897		
Edmonton Terminal Ry.....	9.20	.....	951,293		
Camrose Junction—Terminal Junction.....	45.80	.....	924,944		
Edmonton—Stony Plains.....	20.10	.....	445,339		
St. Albert—Athabaska.....	86.30	.....	1,861,282		
		4,917.87	62,718,432	62,718,432	50,997,982
Land..... \$ 26,384,310					
Interest..... 7,999,120					
Northern Pacific and Manitoba Ry.— 999 Year Lease—					
Winnipeg Terminals.....	3.73	.....	4,569,233		
Winnipeg—Beaver.....	73.08	.....	2,270,436	6,839,669	6,468,223
Portage Junction—Emerson Junction.....	62.81	.....	1,641,406		
Morris—Brandon.....	145.70	.....	3,568,825		
Hartney Junction—Hartney.....	50.45	.....	929,955		
Delta Junction—Delta.....	15.05	.....	252,498		
Land..... \$ 5,849,814		350.82		6,392,684	5,151,500
Interest..... 469,452					
Canadian Northern Saskatchewan Ry.— 100% stock owned by C. N. R. System—					
Wroxton—Willowbrook.....	41.37	.....	878,124		
Mile 76.28—Eston.....	8.66	.....	186,276		
Land..... \$ 170,405		50.03		1,064,400	867,116
Interest..... 40,627					
Canadian Northern Western Ry.— 100% stock owned by C. N. R. System—					
Brazeau Subdivision.....	170.23	.....	6,140,237		
Peace River Subdivision.....	33.00	.....	1,055,598		
Alliance Subdivision.....	60.00	.....	1,138,084		
Land..... \$ 139,771		263.23		8,433,919	7,644,723
Interest..... 312,554					
Canadian Northern Alberta Ry.— 100% stock owned by C. N. R. System—					
Edmonton Junction—Tollerton.....	135.00	.....	6,055,511		
Tollerton—Yellowhead Pass.....	123.90	.....	6,630,488		
Land..... \$ 174,919		258.90		12,685,999	11,979,112
Interest..... 1,045,375					
Canadian Northern Pacific Ry.— 100% stock owned by C. N. R. System—					
Yellowhead Pass—Lucerne.....	5.00	.....	394,318		
Lucerne—Blue River.....	110.70	.....	9,833,956		
Blue River—Kamloops.....	139.40	.....	8,283,329		
Kamloops—Boston Bar.....	125.50	.....	16,361,610		
Boston Bar—Port Mann.....	118.23	.....	11,041,399		
Okanagan Branch.....	3.12	.....	61,843		
Land..... \$ 1,195,844		501.95		45,976,455	44,681,158
Interest..... 3,800,890					
Total.....		9,409.72		335,296,080	298,122,193
Total land..... \$ 45,809,451					
Total interest..... 21,947,291					

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TABLE 3.—Lines under Construction—Canadian Northern Railway System.

Item.	Estimated Cost Reproduction.	C. N. R. System Proportion.
Quebec and Lake St. John Railway— <i>88·5% stock owned by C.N.R. System—</i>	\$	\$
Roberval—Dufferin.....	214,740	
Loretteville—Stoneham.....	130,197	
	344,937	305,269
Land.....\$ 41,648		
Interest.....13,701		
Canadian Northern Quebec Railway— <i>59·7% stock owned by C.N.R. System—</i>		
Arundel—China Clay.....	150,417	89,799
Land.....\$ 3,340		
Interest.....5,703		
Canadian Northern Ontario Railway— <i>100% stock owned by C.N.R. System—</i>		
Montreal—Grenville Junction.....	13,623,141	
Duncan—Leaside and North Toronto Terminals.....	2,069,378	
Longue Pointe—Tunnel Junction.....	66,121	
Toronto, Niagara and Western.....	1,540,000	
	17,298,640	17,298,640
Land.....\$ 9,100,055		
Interest.....835,784		
Canadian Northern Railway— <i>100% stock owned by C.N.R. System—</i>		
Calgary—McLeod.....	533,102	
McLeod—Pincher Creek.....	228,488	
Winnipeg Cutoff.....	75,373	
Dundee North Easterly.....	51,349	
Carlton North.....	6,142	
Preeceville West.....	151,500	
Turtleford North.....	30,031	
Vonda Northeasterly.....	136,496	
Craven Northeasterly.....	24,259	
Gravelbourg Westerly.....	16,206	
	1,252,946	1,252,946
Land.....\$ 170,465		
Interest.....44,979		
Canadian Northern Western Railway— <i>100% stock owned by C.N.R. System—</i>		
Lacombe Spur.....	83,105	
Strathcona Southerly.....	300,681	
Oliver—St. Paul des Metis.....	612,820	
Red Deer Spur.....	469,097	
Alliance Southerly.....	8,480	
Peace River Subdivision.....	865,143	
Medicine Hat—Hanna.....	520,401	
Bruderheim East.....	32,151	
	2,891,878	2,891,878
Land.....\$ 622,716		
Interest.....103,680		
Canadian Northern Saskatchewan Railway— <i>100% stock owned by C.N.R. System—</i>		
Willowbrook West.....	15,462	
Easton Westerly.....	101,191	
	116,653	116,653
Land.....\$ 37,925		
Interest.....5,037		

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TABLE 3.—Lines under Construction—Canadian Northern Railway System—*Con.*

Item.	Estimated Cost Repro- duction.	C.N.R. System Proportion.
	\$	\$
Canadian Northern Pacific Railway— 100% stock owned by C.N.R. System—		
Special Vancouver Terminals.....	9,200,000	
Vancouver Island Branch.....	5,729,766	
Okanagan Branch.....	693,801	
Lulu Island Branch.....	2,105,097	
Patricia Bay Branch.....	1,259,807	
Real Estate not included elsewhere.....	240,639	
	10,229,110	19,229,110
Land..... \$ 11,402,908		
Interest..... 1,882,611		
Various Location Surveys (New Lines).....		71,954
Total.....		41,256,249
Land (Total)..... \$ 21,379,057		
Interest (Total)..... 2,891,494		

TABLE 3a.—Canadian, Northern Railway.

Item.	Estimated Cost Repro- duction.	C.N.R. System Proportion.	C.N.R. Proportion less depre- ciation.
	\$	\$	\$
Hotel properties—			
Hotel Lake St. Joseph—			
88.5% stock owned by C.N.R. System.....	62,068	54,930	47,440
Bala Park and Lake Joseph Hotels—			
100% stock owned by C.N.R. System.....	35,205	35,205	26,405
Prince Arthur and Prince Edward Hotels—			
100% stock owned by C.N.R. System.....	1,401,420	1,401,420	1,233,856
Land..... \$ 329,356			
Terminal Elevators of Port Arthur—			
100% stock owned by C.N.R. System.....	2,955,000	2,955,000	2,680,000
Land..... \$ 205,000	4,453,693	4,446,555	3,987,701
Material on hand.....		2 452,618	2,452,618
Industrial Spurs—			
478 miles at \$3,574 per mile.....	1,708,372		
478 switches and frogs at \$90.....	43,020		
	1,751,392	1,751,392	1,050,835
Canadian Northern Express Co. and Trans. Co.—			
100% stock owned by C.N.R. System.....		330,579	197,347
Total land..... \$ 534,350			
Total.....		8,981,144	7,688,501

Lines, the capital stock of which is not owned entirely by the Canadian Northern Railway Company.—The Canadian Northern System comprises several companies, the control of which has been acquired by the Canadian Northern Railway by the control

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of the majority of the stock. The percentage of stock owned is stated in each case in tables 2 and 3. There is some doubt as to how the values should be treated in cases where the entire stock is not owned by the operating company, and I have, therefore, given in each of these cases the cost of reproduction new, and the depreciation of the entire property, and also a percentage of these figures equal to the percentage of stock owned by the Canadian Northern Railway. I desire to call your special attention to this because your purposes may require a different treatment of these cases. The lines in question have bonds outstanding, and they may also have a floating debt, or short term notes outstanding. All these obligations would, of course, stand first against the assets, and any balance of assets above these obligations would represent the stock equity, and if such balances were divided in proportion to stock ownership, would give the value of the equity represented by the Canadian Northern stock ownership. The value of this equity, however, may not be of any importance to your Commission; and on the other hand, it may fairly be argued that the entire value of the property should be divided in proportion to stock ownership in estimating the physical assets of the Canadian Northern. The equity represented by the stock in one of these roads might be worth nothing; yet in such case, if the Canadian Northern Company owned the entire stock, it would own the entire company, and the entire physical value of that company would be represented among its assets. If it owned 99 per cent of the capital stock, and this stock were worthless, because the bonded indebtedness and the floating debt exceeded the value of the property, it would certainly not be fair to include none of the physical property of the line among the assets of the Canadian Northern. On the whole, the fairest view in general would seem to be that assets and liabilities should all be divided in proportion to stock ownership.

Leased Lines.—The Northern Pacific and Manitoba Railway is merely a line which is leased by the Canadian Northern Company, but the lease is for 999 years. The rental paid is understood to be in the neighbourhood of \$200,000 per year, being the interest on outstanding bonds. The original line, therefore, when leased, represented no capital investment of the Canadian Northern, but merely a contingent liability for payment of the rent. The question is, whether the physical value of this line would be included in the physical value of the Canadian Northern System.

This physical valuation includes, I understand, considerable property representing sums of money which have been expended by the Canadian Northern on the line since it was leased. A 999 year lease is practically ownership, since the sum of one cent placed at compound interest to-day would in 999 years, much more than equal the present value of the line, or probably its value at that time. Such a lease is therefore practically ownership, and at all events should be treated so, as regards the expenditure of money for improvements. Notwithstanding the fact, therefore, that the rental paid would represent the interest on a smaller sum than the physical value of the line, I have included such physical value in the tables just as though the property were owned by the Canadian Northern. If your Commission desires to omit it, it can be subtracted from the total.

Leases.—I understand that the Canadian Northern Company has made some contracts, either as lessee or lessor, for joint use of certain properties, with other lines, as for joint use of tracks or buildings. In the present valuation, no attempt has been made to place a value upon contracts, although they may have a very decided value. It was assumed that such values, which may be called intangible, were not desired in the valuation of the physical property.

Lines Under Construction.—The tables show considerable sums representing the value of lines partially constructed or surveyed. Some of this property may never be put into operation; at least, some of the surveys may never lead to the construction of the contemplated lines, and may thus represent abandoned property. I believe that it is generally proper in railroad valuations not to include abandoned property; although

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I am very well aware that in questions of rates or capital, there are strong arguments in favour of including such property in some instances, and I personally believe that in such instances, it should be included.

Nevertheless in the present valuation, no such property has, to my knowledge, been included in the figures given.

Hotels.—The estimate includes only three hotels. The value of these has been estimated as accurately as the circumstances would permit, together with the land on which they stand. In one case, the hotel stands on railroad right of way which has been elsewhere included.

Material on hand.—The company has furnished an inventory of materials on hand and its value. It was, of course, impossible to check this. Certain items, however, have been excluded because they were considered as improper items in a physical valuation, and as belonging rather to maintenance expenditures. Approved items have been given the values on the inventory.

Working Capital and Cash on hand.—In an estimate of physical valuation on the cost of reproduction basis, it is usual to add to the value of physical elements a certain sum for working capital, for the reason that a company beginning operations with only the physical elements in its possession, and no working capital, would be unable to do business. For this reason, the addition of a certain sum for working capital has been frequently approved by courts and commissions.

Cash on hand, is, of course, a physical asset.

Your attention is called to these two matters for the reason that neither have been included in the present valuation, and it may be desirable for you to inquire as to the cash on hand and to take account of it as well as of a proper allowance for working capital, in whatever use you may wish to make of the results of this valuation.

Steamers.—Nothing has been included in this valuation for steamers, for I am informed that all assets under this item have been converted into cash.

Industrial Spurs.—The Canadian Northern Railway Company, like other companies, has connected with its lines a considerable mileage of industrial spur tracks leading to factories, coal yards and other private property. I understand that such sidings are originally built at the expense of the private party desiring them, and that the expense, in some cases at least, is gradually returned to such owners in the way of rebates on freight received or shipped, so that in the course of time, if the individual is successful in his business, and the spur track is justified as an investment by the railway company, it will ultimately be owned by said company.

I understand that in other cases the railroad company pays for the rails only on such spur tracks, the individual requesting such tracks paying all other expenses.

Time did not permit of a careful examination into the value to the railway company represented by such tracks. To ascertain this would have required an examination into the status of every individual spur, and would, therefore, have required the services of our whole force for a much longer time than the entire time which we had at our disposal.

In this valuation, the value of such spur tracks has been given as the value of the rail alone, assuming a probable weight in cases where the actual weight was not known.

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The following comparison of our results with cost claimed by the company is of interest:—

Company's statement of cost.....		\$494,112,489
" " additional terminal and other properties....		5,922,946
Deduct—		\$500,035,435
Capital stock.....	\$105,000,000	
Less cash subsidies.....	28,000,000	
		\$77,000,000
Cost of land, approximate.....	34,022,946	
Interest.....	31,533,200	
Discount.....	20,822,000	
Canadian Northern Steamships.....	2,300,000	
For industrial spurs, which Commission report allows for metal only but which Company includes as Company track—excess.....	2,957,289	
		\$168,635,435
C.N.R. cost, minus items above.....		\$331,400,000
Commission, estimated cost of reproduction (not cost).....		\$397,441,563
Deduct—		
N. P. and Manitoba Ry. (leased line) Excess of ap- praisal over expenditure since lease.....	\$ 4,960,000	
Reproduction cost of land (except N.P. and M. land which has been deducted above.....	62,549,445	
Materials and supplies.....	2,452,618	
Interest.....	\$24,839,000	
Minus Int. N.P. and M.....	469,500	
	\$24,369,500	
		\$ 94,331,563
Add equipment.....		\$303,110,000
		56,590,000
Commission of Inquiry.....		\$359,700,000
C. N. R. System.....		331,400,000
Difference.....		\$ 28,300,000

This last figure is about \$28,000,000 above the corresponding figure for the company. The company's statement of cost, however, includes amounts paid for branch lines purchased, which amounts may have little or no relation to the original cost or to the cost of reproducing said lines. Moreover, the company does not own the entire capital stock of some of the lines which it controls.

These facts render any comparisons between our figures and their statement of total cost, of little or no value. There may be a great difference between the cost of a railroad and the cost of reproducing it. However, this comparison, such as it is, indicates, if it indicates anything, that our estimate is a liberal and fair one, and cannot be justly criticised as being too low, on the whole.

DEPRECIATION.

The examination of the various properties made by our forces was not in sufficient detail to enable the depreciation of the various elements to be estimated with any degree of accuracy. It was not at first contemplated that depreciation would be taken account of. However, at the request of the Commission, our field engineers have estimated the depreciation of the various items and the various lines as accurately as possible under the circumstances, on the basis of their observations and notes. Information was not at hand with reference to the age of the various elements of value, so that the depreciation could not be estimated on the basis of the proportion of useful life elapsed. Such a method, however, is not necessarily the correct one. There is much uncertainty

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with reference to the average life of the various elements in the property, and age tables should be employed with great caution. All that our engineers could do was to estimate, to the best of their judgment, the average depreciation of the various elements, based upon their general observations. It is, however, only a rough approximation.

In order that there may be no misunderstanding in the minds of those who read this report, it may be well to discuss briefly the bearing which depreciation may have upon the valuation of the property.

When an investment is made in the construction of a railroad, assuming that the funds have been provided and invested properly, the physical property is represented by a definite amount of capital carried on the books under the title "Cost of Road." The actual amount of capital issued may be considerably greater than this, for various reasons, such as discount on securities issued which is to be amortized, stock bonus which may have been properly given away with bonds, etc.

The road, however, immediately begins to depreciate. Certain parts of it indeed have depreciated before the entire line is open. Ties, rails and bridges gradually wear out, and in the course of a few years, even before any renewals may have become necessary, a considerable depreciation may have occurred. This depreciation is an operating liability of the company; in other words, the company must replace worn out items, paying out of earnings for such replacement in kind, or to the extent of the original cost, and capitalizing any excess when a worn out unit is replaced by a new unit of greater size, capacity or cost.

In the case of a railway company which has a great multiplicity of units, and a great number of units under each heading, that is to say, millions of ties, thousands of bridges, hundreds of locomotives and cars, thousands of tons of steel rail, the cost of renewals will generally settle down after a few years to a nearly uniform annual charge. For instance, if the life of a tie is eight years, this means in practice that each year about one-eighth of the total number of ties in the road will have to be renewed. It may be approximately the same with the other elements of value; but whether it is or not the company must make replacements in kind out of earnings, and earnings should be sufficient to allow the company to do this besides earning all other expenses and a fair rate of return on the investment. If large amounts of money are suddenly required for replacing large items, the company may be allowed, with the approval of the proper authorities, to issue short term notes or bonds, to provide the necessary funds for such replacements, with the requirement that such notes or bonds shall be gradually amortized by means of a fund which is added to yearly out of earnings, to such extent that said fund may be large enough to pay the notes or bonds when due. Such a transaction does not alter the principal that renewals in kind must be paid for out of earnings.

The conclusion to be drawn from these considerations, as it seems to me, is that, if a physical valuation is used as a basis of rates, or capitalization, or condemnation, no depreciation should be deducted from such figures as may be finally determined to be the true value *new*, unless depreciation has not been properly provided for by renewals; in other words, unless the company has failed to maintain the property in reasonably good operating conditions, making necessary renewals when required.

If the property has been adequately maintained, it is as valuable for operating purposes as if it were new. A fixed amount of capital went into it, and that capital was entitled to earn a fair rate above a sufficient amount to pay operating expenses, fixed charges, taxes and depreciation. If, subsequent to the original construction, a valuation is made and the true value of the property is determined, there is no logical reason for deducting depreciation, unless excessive dividends have been paid and undue depreciation allowed. The entire original capital, properly invested, as the fair present value, is entitled to earn its fair return just as it was originally.

Suppose, for instance, that a public service corporation for which business is ready and waiting, issues and expends the sum of \$1,000,000 for its property and that the

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elements of physical value are such that no large renewals will be required at any one time, but that the maintenance of the property required a tolerably uniform annual expenditure; in such case there will be no necessity for the accumulation of a so-called depreciation fund. Necessary renewals are paid for yearly as they occur, yet in the course of a few years time, the depreciation of the physical property may amount to say 25 per cent. Is there any reason in this fact for the claim that the company is over-capitalized or that it should be allowed to earn a fair return on only \$750,000, or that if taken by condemnation only the sum \$750,000 should be paid for it? It is true that if the public should take over the property it would be taking physical elements whose actual value would be only \$750,000, but the public would take over the property subject to the necessity of making repairs and renewals when needed; and as an operating concern, the property would be worth the original investment of \$1,000,000 which had been legitimately expended on its construction, or whatever might be its subsequent value new. If the owners were only paid \$750,000, and if since its construction the stockholders had received only fair dividends upon their original legitimate investment, and the property had been adequately maintained, it would clearly be unfair to take their property and pay them only \$750,000, or to decide that their corporation was over-capitalized or to allow them thereafter to earn a fair return upon only \$750,000.

The case would be very different if the stockholders had received excessive dividends, or if the property had been inadequately maintained, and necessary renewals neglected in order to pay such excessive dividends. In such cases, it would be proper to deduct from the true value new a portion of the whole of the accrued depreciation.

If the property of the concern is of such a character that renewals require the expenditure of large sums at the expiration of considerable periods of time, as for instance, in replacing the machinery of a power plant, a steamship, or pipes in city streets, proper management would require that in order to provide for such renewals a depreciation fund should be established and should be added to each year out of earnings to such extent that the fund would be adequate to provide for such renewals when they should come necessary. In this case a valuation of the property would show among the physical assets, the amount of money in this depreciation fund, and if this amount were adequate and were being added to each year upon a plan that would provide for renewals when necessary, the fund should be considered as offsetting all accrued depreciation.

A water company or gas or electric company whose property consists of large units which are not renewed to any large extent prior to total replacement, should establish such a depreciation fund. Railroad companies, however, have rarely established such funds in the past, inasmuch as their expenses for renewals, while varying from year to year, settle down approximately to a fairly uniform annual charge.

It has seemed desirable to express in the above discussion, my views with reference to the matter of depreciation, for the reason that I have always held that in railroad valuation the fair present value of the property, new, should be determined, using as a basis either the original cost *new*, or the cost of reproduction *new*, and that from this sum no depreciation should be deducted in valuations made for rate or capitalization, or condemnation purposes, *unless excessive dividends have been paid and the property has been allowed to depreciate unduly in consequence thereof.*

I may add that it is perfectly clear to my mind that in the case of a railroad property which has only paid reasonable dividends, and which has been adequately maintained in good operating condition, if depreciation is deducted from a valuation of the property new, then thereafter, the operating liability of the company for maintenance should only amount to keeping the property *up to the assumed depreciated condition.* In such case, when a new tie is put into the track, inasmuch as the tie removed has no value, the entire cost of the new tie should be capitalized, or if the condition of all the ties has been assumed as 50 per cent of the value new, then every tie renewed

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should have half the value of the new tie charged to capital. In other words, the valuation gives each and every item with a depreciated value, depending upon its age and condition; and in renewing that item later, the company should only be obliged to renew it out of earnings up to that identical depreciated value. Such a plan would, in a few years, more or less depending on circumstances, result in allowing an increase of capital precisely equal to the assumed depreciation, since each item when renewed new, would involve an increase of capital equal to its depreciation shown in the valuation and thereafter the operating liability would be for renewal in full. This would bring us back again to the original proposition that no depreciation should be deducted from the value new, although if this result should be reached through the process described, the stockholders, while the adjustment was taking place, would have been penalized by being allowed a fair return, not on their original investment honestly made or the true value new, but on a smaller sum.

One further point should be mentioned. It is often argued that if the value of land, in an estimate of reproduction new, is taken at its present value, then inasmuch as this value has in all probability increased or *appreciated* since the road was built, it is also necessary that elements whose value has decreased or *depreciated*, should have such depreciation deducted. If we allow appreciation of land, it is said, why should we not allow depreciation of rails, ties, bridges, etc.? This proposition, however, involves the fallacy that the word "appreciation" when applied to increased value of land is not the converse of depreciation as applied to rail, ties and bridges. Land has appreciated, if it costs more to buy it to-day than it did originally. If rails, ties or bridges cost less to buy to-day than they did originally, then in an estimate of the cost of reproduction, we would take this lesser cost; we would properly allow this depreciation of those elements just as we allow the appreciation of land. But the depreciation of rails, ties and bridges, due *to wear or the action of the elements* is a totally different thing, and that is the sense in which the word is generally used. In other words, a false antithesis between the words "appreciation" and "depreciation" is the fallacy involved in the argument referred to. This fallacy has been the source of much confusion of thought on this particular subject. The above is a general discussion of the subject of depreciation. In the present valuation, which is simply to ascertain the total present normal value of the property, the depreciation stated is the estimated total depreciation. It is an undoubted fact that some parts of the Canadian Northern System have been allowed to depreciate unduly, and to a considerable extent.

DEFICIENCY OF EARNINGS.

If the original cost of a property, as of to-day, is being estimated as a basis for the valuation, it is evident that every element of such cost must be included; not only the first cost when the property was built, but any subsequent cost for additions or improvements or renewals, cases where elements of the property have been renewed on greater size or capacity or at greater cost than their original cost. This is one of the difficulties in the first cost method, since it is frequently difficult and not seldom impossible to tell from the annual accounts what proportion of annual expenditures should be charged to maintenance, and what proportion to improvements or capital. In addition, it is generally recognized that any deficiency below a fair rate of return in any one year on the original cost up to that year which the stockholders have suffered should be added at the end of that year to the cost of the property. In other words, an investor expects to receive, and is entitled to receive, a fair return from the outset. If there is doubt as to whether the property can earn such a rate, then the investor will demand a correspondingly larger inducement, in the way of larger bond interest, greater discount on bonds, a stock bonus, preferred stock bearing a high interest return, or by some other means.

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Of course if what is assumed as a fair rate of return is taken high enough, deficiency in earnings ought not to be included in the value; but assuming that a fair rate of return is based upon present condition and a fairly prosperous concern, it is unquestionably fair to capitalize a deficiency of returns if it has existed at any period during the history of the company. It would be entirely unfair, for instance, in the case of a company, properly financed, and which for many years had never paid a dividend until, during a period of a few years of exceptional prosperity, it managed to pay 5 per cent, to allow it to earn thereafter, only 5 or 6 per cent on its original cost without regard for the many years during which its stockholders received nothing.

Similar considerations apply if the valuation is made on the basis of the cost of reproduction new, except that if the property is reproduced to-day, it must be assumed to find the conditions of to-day awaiting it. If the traffic of to-day is such as to enable the company to earn a fair return on its true value, then no allowances should be made for any deficiency in earnings during the early years, although such deficiency may have actually existed during the early history of the company. To make such allowances would be confusing original cost with cost of reproduction. On the other hand, if conditions to-day do not allow the company to earn a fair return, then an estimate of the cost of reproduction new made to-day should be increased year by year hereafter by the amount of such deficiency, in estimating allowable returns or capital.

This consideration, which is usually neglected in discussions of this subject, affords another justification for estimating real estate at its cost of reproduction at the present time, this being strictly interpreted to mean the amount which the company would be obliged to pay for the property if purchased to-day. It is another instance of the necessity of adhering, in valuation, to one basis or the other, either the original cost, or the cost of reproduction; and another reason for questioning the soundness of the decision of the court in the Minnesota Rate Case.

In the present valuation, therefore, nothing has been allowed for any deficiency in earnings.

Respectfully submitted,

GEORGE F. SWAIN.

II.—GRAND TRUNK PACIFIC.

The method employed in conducting the work with relation to this system was the same as has been already described with reference to the Canadian Northern System, except that for the entire main line of the Grand Trunk Pacific we have used the actual quantities for grading and bridging as approved by the Dominion Government. The Dominion subsidy, however, only covers the main line, and the Dominion Government had not, therefore, approved the estimate of quantities for branch lines. For branch lines, therefore, we used the results of our own inspection, as well as for many items on the main line.

It is convenient to divide the Grand Trunk Pacific into two sections, namely the Prairie Section, including the main line and branches east of Wolf creek, and the Mountain Section west of Wolf creek.

Table I shows in the last column the result of our valuation of the Prairie Division, main line only.

In the first column the cost is given, based on the statement from the company, certified to the Government for the main line.

Table II gives similar information for the Mountain Division.

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The first column gives incomplete cost figures as submitted by the railway company, in response to the request of the Commission; the second column gives the result of our valuation.

The third column gives the same as the second, some items being combined in this column.

The fourth column gives the cost based upon figures certified to the Government by the company.

TABLE I.—Grand Trunk Pacific Railway, Prairie Section—Main Line Only.
Comparison of Valuation and Cost.

Description of Account.	From Government G.T.P. Statement.	Valuation.
	\$	\$
Right of way and real estate	807,331	3,705,874
Grading and tunnels	7,261,350	8,597,102
Steel bridges on concrete abutments, etc.	2,139,385	2,016,192
Trestles and culverts of timber	1,839,805	1,584,571
Ties	2,490,405	2,288,391
Rails, frogs and switches and fastenings	6,528,752	6,071,893
Track-laying	836,250	650,715
Ballasting	2,868,887	2,223,645
Buildings, water stations, etc.	2,136,828	2,245,481
Shop machinery and tools	204,661	134,655
Fencing, cattle-guards and snow fences	538,379	529,803
Telegraph and telephone lines	436,281	442,958
Equipment and maintenance of sections	2,644,448	248,537
Solidification		446,544
Ploughing fire-guards	50,709	
Interlocking signal apparatus	81,657	101,406
Crossings and signs		68,105
Fuel stations	92,792	152,000
Gas-making machine	87	
Electric light plant	36	
Transportation charges	25	
Construction rolling stock	422,617	
Fuel stock	43,250	
Dining and sleeping car stock	19,104	
Tie stock	85,892	
Lumber stock	695	
Telegraph stock	29,241	
Totals	31,558,867	31,507,872
Contingencies		834,060
Legal and engineering expenses	3,460,300	1,950,528
Interest	8,237,476	3,140,401
Remaining overheads		1,330,433
	43,256,643	38,763,294
Deduct—		
Telegraph operating profit	186,366	
Operating trains profit	5,466,817	
Road stock	116,565	
Station lumber stock	62,242	
Totals	37,424,653	38,763,294

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TABLE II.—Grand Trunk Pacific Railway, Mountain Division—Comparison Statement.

De-scription of Account.	G.T.P. Cost from Railway.	Valuation.		G.T.P. Cost from Government.
	\$	\$	\$	\$
Right of way.....	282,000	3,140,490	4,675,779	311,344
Real estate.....		1,535,289		
Grading.....	46,953,334	41,516,494	43,948,472	48,035,575
Tunnels.....	2,509,796	2,431,978		
Steel bridges.....	7,978,000	6,196,646	6,196,646	7,839,246
Bridges, trestles and culverts.....	2,518,997	2,346,489	2,346,489	2,161,469
Ties.....	1,206,059	1,461,668	1,461,668	1,453,762
Rail.....	4,442,016	4,924,480	5,786,868	5,568,379
Frogs and switches.....	73,028	75,086		
Track fastenings.....		787,302	1,505,298	3,129,050
Ballast.....	1,500,845	1,505,298		
Track laying and surfacing.....	2,382,611	664,011	664,011	753,750
Fencing.....	37,119	89,457	89,457	433,172
Crossings and signs.....	12,005	21,149	21,149	
Telegraph and telephone lines.....	492,543	394,443	394,443	503,031
Interlocking and signal apparatus.....				57
Shop machinery.....		100,500	100,500	100,703
Shops.....	1,110,908	649,115	1,884,190	1,811,042
Water stations.....	580,442	331,090		
Station buildings and fixtures.....		470,655	1,884,190	1,811,042
Storage warehouses.....	405,655	32,616		
Miscellaneous structures.....	110,689	173,206	210,600	156,721
Snowsheds.....	188,481	227,508		
Fuel stations.....	164,303	210,600	210,600	156,721
Docks and wharves.....	222,711	130,333	130,333	222,013
Roadway tools.....		228,465	228,465	1,502,453
Maintenance during construction.....		813,689	813,689	
Solidification and adaptation.....				633
Ploughing fire-guards.....				36,132
Transfer boats and barges.....				620,771
Work west of Prince Rupert dock.....				*2,642,304
Construction rolling stock.....				913,986
Operating trains loss.....				17,427
Operating boats and barges loss.....				748
Dining and sleeping car stock.....				43,619
Tie stock.....				12,316
Telegraph stock.....				13
General stores.....				
Total.....	72,971,632	70,458,057	70,458,057	78,269,721
Interest.....		8,767,204	8,767,204	9,882,672
Legal and engineering expenses.....		3,946,987	3,946,987	5,355,470
Contingencies.....		1,315,646	1,315,646	
Remaining overheads.....		3,569,608	3,569,608	
Total (carried forward).....	72,971,632	88,057,502	88,075,502	93,507,863
Deduct.....				
Telegraph operating profit.....				38,522
Wharfage and warehouse operating profit.....				67,351
Road stock.....				38,887
Fuel stock.....				12,697
Lumber stock.....				43,222
Net cost.....	72,971,632	88,057,002	88,057,502	93,307,184

* This total includes the sum of \$2,642,304 for "construction rolling stock" which probably represents equipment furnished by the Company to be used in construction. Our estimate includes no such item because the prices that we have assumed have been based upon the contractor furnishing his own equipment, so that our total is properly comparable with that of the company in column 4. Much of this "construction rolling stock" is still on hand, and I understand that Sir Collingwood Schreiber has approved but one-half of the original item, which would amount to crediting the company with this rolling stock at a depreciated value of 50 per cent.

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TABLE III.—Grand Trunk Pacific Railway, Prairie Section.

VALUATION SUMMARY.

	MEASURABLE QUANTITIES.		INCLUDING OVERHEADS.	
	Amount.	Rate per Mile.	Amount.	Rate per Mile.
	\$	\$	\$	\$
Winnipeg—Melville.....	8,560,389	30,573	10,614,882	37,910
Melville—Biggar.....	7,604,070	30,674	9,429,047	38,020
Biggar—Edmonton.....	8,361,861	32,061	10,368,707	39,681
Edmonton—Wolf Creek.....	3,949,082	33,523	4,896,862	41,569
Total excluding Edmonton.....	28,475,402	31,390	35,309,498	38,926
Edmonton Terminals.....	3,032,476	.....	3,453,796	.....
Total.....	31,507,872	34,287	38,763,294	42,184
Unearned increment on land.....	2,898,543	.....	3,362,698	.....
Total exclusive of unearned increment on land..	28,609,329	31,136	35,400,596	38,527

	OVERHEADS INCLUDED.		
	Comm. Statement.	G.T.R. Statement.	Difference.
	\$	\$	\$
Grand total, including unearned increment on land.....	38,763,294	37,424,653	+ 1,338,641
Grand total, excluding unearned increment on land.....	35,400,596	37,424,653	— 2,024,057

LAND AND INTEREST SUMMARY.

Subdivision.	Con- struction.	Land.	INTEREST ON		REMAINING OVERHEADS ON	
			Con- struction.	Land.	Con- struction.	Land.
	\$	\$	\$	\$	\$	\$
Winnipeg—Melville.....	7,924,409	635,980	792,441	114,476	1,109,417	38,159
Melville—Biggar.....	7,205,220	398,850	720,522	71,793	1,008,731	23,931
Biggar—Edmonton.....	7,961,461	400,400	796,146	72,072	1,114,604	24,024
Edmonton—Wolf Creek.....	3,833,362	115,720	383,336	20,836	536,671	6,943
Total excluding Edmonton Terminals..	26,924,452	1,550,950	2,692,445	279,171	3,769,423	93,057
Edmonton Terminals.....	877,546	2,154,924	39,490	129,295	144,795	107,746
Total including Edmonton Terminals..	27,801,998	3,705,874	2,731,935	408,466	3,914,218	200,803
Unearned increment on land.....	.....	2,898,543	.....	319,228	.....	144,927
Total less unearned increment on land.	27,801,998	807,331	2,731,935	89,238	3,914,218	55,876

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TABLE III.—Grand Trunk Pacific Railway, Prairie Section—*Concluded.*

	UNEARNED INCREMENT OF LAND.			
	Excluded.		Included.	
	\$	\$	\$	\$
Total construction.....	27,801,998		27,801,998	
Total land	807,331		3,705,874	
Construction plus land		28,609,329		31,507,872
Interest on construction	2,731,935		2,731,935	
Interest on land	89,238		408,466	
Interest on construction and land		2,821,173		3,140,401
Remaining overheads on construction	3,914,218		3,914,218	
Remaining overheads on land	55,876		200,803	
Remaining overheads on construction, plus land		3,970,094		4,115,021
Grand Totals.....		35,400,596		38,763,294

TABLE IV.—Grand Trunk Pacific Railway, Mountain Section.

VALUATION SUMMARY.

Subdivision.	MEASURABLE QUANTITIES.		INCLUDING OVERHEADS.	
	Amount.	Rate per Mile.	Amount.	Rate per Mile.
	\$	\$	\$	\$
Wolf Creek—Jasper.....	6,592,409	58,966	8,309,070	74,321
Jasper—McBride	8,719,668	80,217	10,987,825	161,984
McBride—Prince George.....	14,611,219	100,146	18,414,206	126,211
Prince George—Endako.....	8,077,981	70,182	10,181,097	88,455
Endako—Smithers.....	3,785,111	46,281	7,293,123	58,345
Smithers—Pacific	10,012,541	93,575	12,618,744	117,932
Pacific—Prince Rupert.....	11,257,891	95,406	14,203,444	120,368
Total excluding Prince Rupert Terminals.....	65,056,820	78,243	82,007,509	98,626
Prince Rupert terminals.....	5,401,237		6,049,993	
Total including Prince Rupert Terminals.....	70,458,057	84,634	88,057,502	105,775
Unearned increment on land.....	4,364,435		4,767,086	
Total exclusive of unearned increment on land	66,093,622	79,392	83,290,416	100,048

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TABLE IV.—Grand Trunk Pacific Railway, Mountain Section—*Continued.*

	Overheads Included.
	\$
Prince Rupert Terminals, exclusive of land.....	2,045,495
Prince Rupert Terminals, land.....	4,004,498
	6,049,993

	Comm. Estimate.	G.T.P. Estimate.	Difference.
	\$	\$	\$
Grand total, including Prince Rupert Terminals, with their land.	88,057,502	93,307,184	— 5,249,682
Grand total, including Prince Rupert Terminals without their land (\$88,057,502—\$4,004,498)	84,053,004	93,307,184	— 9,254,180
Grand total, excluding unearned increment on land.....	83,290,416	93,307,184	—10,016,768

LAND AND INTEREST SUMMARY.

Subdivision.	Construc- tion.	Land.	INTEREST ON		REMAINING OVER- HEADS ON	
			Construc- tion.	Land.	Construc- tion.	Land.
	\$	\$	\$	\$	\$	\$
Wolf Creek—Jasper.....	6,526,554	65,855	848,452	15,805	848,452	3,952
Jasper—McBride.....	8,693,568	26,100	1,130,164	6,264	1,130,163	1,566
McBride—Prince George.....	14,509,441	101,778	1,886,227	24,427	1,886,227	6,106
Prince George—Endako.....	8,006,961	71,020	1,040,905	17,045	1,040,905	4,261
Endako—Smithers.....	5,688,056	97,055	739,448	23,293	739,448	5,823
Smithers—Pacific.....	9,938,971	73,570	1,292,066	17,657	1,292,066	4,414
Pacific—Prince Rupert.....	10,795,318	462,573	1,403,391	111,017	1,403,391	27,754
Totals excluding Prince Rupert Terminals.	64,158,869	897,951	8,340,653	215,508	8,340,652	53,876
Prince Rupert Terminals	1,623,409	3,777,828	211,043	.....	211,043	226,670
Totals including Prince Rupert Terminals..	65,782,278	4,675,779	8,551,696	215,508	8,551,695	280,546
Unearned increment on land.....	.....	4,364,435	.....	140,785	.....	261,866
Totals, less unearned increment on land. ...	65,782,278	311,344	8,551,696	74,723	8,551,695	18,680

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TABLE IV.—Grand Trunk Pacific Railway, Mountain Section—*Concluded.*

	UNEARNED INCREMENT.			
	Excluded.		Included.	
	\$	\$	\$	\$
Total construction.....	65,782,278		65,782,278	
Land.....	311,344		4,675,779	
Construction plus land.....		66,093,622		70,458,057
Interest on construction.....	8,551,696		8,551,696	
Interest on land.....	74,723		215,508	
Interest on construction and land.....		8,626,419		8,767,204
Remaining overheads on construction.....	8,551,695		8,551,695	
Remaining overheads on land.....	18,680		280,546	
Remaining overheads on construction and land.....		8,570,375		8,832,241
Grand totals.....		83,290,416		88,057,502

TABLE V.—Grand Trunk Pacific Railway, Prairie Section.

ESTIMATE COMPARISONS.

	G.T.P. ESTIMATE.			COMM. OF INQUIRY ESTIMATE.	
	Including Land.		Without Land.	Including Land.	Without Land.
	\$	\$	\$	\$	\$
Construction cost.....	31,558,867		30,751,536	31,507,872	27,801,998
Overheads, less interest.....	3,460,300		3,460,300	4,115,021	3,914,218
Total, excluding interest.....	35,019,167		34,211,836	35,622,893	31,716,216
Interest.....	8,237,476		* 8,092,362	3,140,401	2,731,935
Total, including interest and overheads.....	43,256,643		42,304,198	38,763,294	34,448,151
Deduct—					
Telegraph operating profit.....	186,366				
Train operating profit.....	5,466,817				
Road stock.....	116,565				
Station lumber stock.....	62,242				
Total deductions.....	5,831,990		5,831,990		
Total.....	37,424,653		36,472,208	38,763,294	34,448,151

*NOTE.—Interest amounts in "Without Land" column "G.T.P. Statement" are not exact, but proportioned.

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TABLE VI.—Grand Trunk Pacific Railway, Mountain Section.

ESTIMATE COMPARISONS.

	G.T.P. ESTIMATE.			COMM. OF INQUIRY. ESTIMATE.	
	Including Land.		Without Land.	Including Land.	Without Land.
	\$	\$	\$	\$	\$
Construction cost	78,269,721	77,958,377	70,458,057	65,782,278	
Interest	9,882,672	*9,807,950	8,767,204	8,551,696	
Remaining overheads	5,355,470	*5,336,789	8,832,241	8,551,695	
Total	93,507,863	93,103,116	88,057,502	82,885,669	
Deduct—					
Telegraph operating profit	38,522				
Wharfage and warehouse profit	67,351				
Road stock	38,887				
Fuel stock	12,697				
Lumber stock	43,222				
Total deductions	200,679	200,679			
Net cost	93,307,184	92,902,437	88,057,502	82,885,669	

*NOTE.—In the G.T.P. "Without Land" column, the reduced interest and overhead is not exact, but arrived at by deducting, from the known total interest and remaining overheads, 24 per cent and 6 per cent, respectively, on the land deducted.

TABLE VII.—Grand Trunk Pacific Railway.

CONSOLIDATED STATEMENT.

Line.	Mileage.	Construction Items.	Land Cost.	Interest.	Other Overheads.	Reproduction Cost.
	\$	\$	\$	\$	\$	\$
<i>Main Lines.—Prairie Section.</i>						
Winnipeg—Melville	280 00	7,924,409	635,980	906,917	1,147,576	10,614,882
Melville—Biggar	248 00	7,205,220	398,850	792,315	1,032,662	9,429,047
Biggar—Edmonton	261 30	7,961,461	400,400	868,218	1,138,628	10,368,707
Edmonton Terminals	11 76	877,546	2,154,924	168,785	252,541	3,453,796
Edmonton—Wojf Creek	117 80	3,833,362	115,720	404,166	543,614	4,896,862
Total Prairie main line	918 86	27,801,998	3,705,874	3,140,401	4,115,021	38,763,294
<i>Main Lines.—Mountain Section.</i>						
Wolf Creek—Jasper	111 80	6,526,554	65,855	864,257	852,404	8,309,070
Jasper—McBride	108 70	8,693,568	26,100	1,136,428	1,131,729	10,987,825
McBride—Prince George	145 90	14,509,441	101,778	1,910,654	1,892,333	18,414,206
Prince George—Endako	115 10	8,006,961	71,020	1,057,950	1,045,166	10,181,097
Endako—Smithers	125 00	5,688,056	97,055	762,741	745,271	7,293,123
Smithers—Pacific	107 00	9,938,971	73,570	1,309,723	1,296,480	12,618,744
Pacific—Prince Rupert	118 00	10,795,318	462,573	1,514,408	1,431,145	14,203,444
Prince Rupert Terminals	1 00	1,623,409	3,777,828	211,043	437,713	6,049,993
Total Mountain main line	832 50	65,782,278	4,675,779	8,767,204	8,832,241	88,057,502

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TABLE VIII.—Grand Trunk Pacific Railway.
CONSOLIDATED STATEMENT.

Line.	Mileage.	Construc- tion Items.	Land Cost.	Interest.	Other Over- heads.	Repro- duction. Cost.
<i>Branch Lines Co.</i>		\$	\$	\$	\$	\$
Harte—Brandon.....	21·9	194,277	96,511	14,533	32,024	337,345
Melville—Canora.....	54·6	904,079	59,921	44,279	129,566	1,137,845
Melville—Regina.....	212·0	4,188,850	1,246,034	263,260	648,740	6,346,884
Regina—Northgate.....	155·1	2,324,236	145,095	113,297	332,647	2,915,275
Young—Prince Albert.....	111·3	1,780,628	196,145	91,897	259,094	2,327,764
Biggar—Loverna.....	103·6	1,603,529	85,000	77,259	228,744	1,994,532
Oban—Battleford—Carruthers.....	97·8	1,825,632	87,391	87,397	259,958	2,260,378
Tofield—Calgary.....	201·2	4,696,589	1,052,396	274,490	710,142	6,733,617
Alberta Coal Branch.....	56·7	2,331,958	12,757	105,703	327,112	2,777,530
Total Branch Lines Co.....	1,014·2	19,849,778	2,981,250	1,072,115	2,928,027	26,831,170
<i>Saskatchewan Railway.</i>						
Weyburn branch.....	14·9	177,957	31,075	9,873	26,468	245,373
<i>Summary.</i>						
Main Line, Prairie.....	918·86	27,801,998	3,705,874	3,140,401	4,115,021	38,763,294
Main Line, Mountain.....	832·50	65,782,278	4,675,779	3,767,204	8,832,241	88,057,502
Branch Lines Co.....	1,014·20	19,849,778	2,981,250	1,072,115	2,928,027	26,831,170
Saskatchewan Railway.....	14·90	177,957	31,075	9,873	26,467	245,373
	2,780·46	113,612,011	11,393,978	12,983,595	15,901,756	153,897,339

GRAND TRUNK PACIFIC RAILWAY.

In British Columbia.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. On all items except land—	
(a) Contingencies, 2 p.c.	1·02
(b) Engineering 5 p.c. on 1·02 ..	1·071
(c) Legal, etc., $\frac{1}{2}$ p.c. on 1·02 ..	1·0787
(d) Administration, $\frac{1}{2}$ p.c. on 1·0275 ..	1·0864
(e) Taxes, $\frac{1}{2}$ p.c.	1·0914
(f) Interest, 4-year period equals average 2 years, 12 p.c. on 1·0914 ..	1·2224
(g) Commissions, 3 p.c. on 1·2224 ..	1·2591
Say, 26 p.c.	
B. On land—	
(a) Administration, $\frac{1}{2}$ p.c.	1·0075
(b) Taxes, 1 p.c.	1·0175
(c) Interest, 4-year period, 24 p.c. on 1·0175 ..	1·2617
(d) Commissions, 3 p.c. on 1·2617.....	1·2996
Say, 30 p.c.	

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GRAND TRUNK PACIFIC RAILWAY.

Prairie Section, Main Line.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. On all items except lands—	
(a) Contingencies, 3 p.c.	1'03
(b) Engineering, 5 p.c. on 1'03	1'0815
(c) Legal, etc., 1 p.c. on 1'03	1'0918
(d) Administration, 1 p.c. on 1'04	1'1022
(e) Taxes, say $\frac{1}{2}$ p.c.	1'1072
(f) Interest, 3-year period, average $1\frac{1}{2}$ year at 6 p.c. equals 9 p.c. on 1'1072	1'2069
(g) Commission, 3 p.c. on all previous 1'2069	1'2431
Say, 24 p.c.	
B. On land—	
(a) Administration, etc., 1 p.c.	1'01
(b) Taxes, 3 years at $\frac{1}{2}$ p.c. equals $1\frac{1}{2}$ p.c.	1'025
(c) Interest, 3 years at 6 p.c. equals 18 p.c. on 1'025	1'2095
(d) Commissions, 3 p.c. on 1'2095	1'2458
Say, 24 p.c.	

A large part of the difference between the results of our valuation and the cost figures, either those received direct from the company or those certified to the Government, arise from the higher valuation which we have assigned to real estate or right of way, and especially to the terminals at Prince Rupert.

These terminals originally cost little or nothing; at the present time, however, on the basis of the assessed valuation, which is the basis of our figures, the real value is large.

This is a case in which, if the railway were removed, those lands would apparently return to their original value; that is to say, they owe their present value practically entirely to the presence of the railway.

It might perhaps fairly be said, therefore, that in estimating the cost to reproduce the property, inasmuch as if the railway were removed these terminals would be of little or no value, they should be given a small value in the estimate; however, we assigned to them a value based upon the assessed value of adjoining property per square foot or per acre.

In order, therefore, to compare properly our valuation with the estimate of cost, the unearned increment of these and other lands should be deducted. This has been done in table III and in table IV.

Table III gives a summary by subdivisions of the Prairie section of the estimated cost of construction and of land, with interest on construction items and on land, and remaining overheads allowed on construction and on land.

For the estimate in the last line of the table proper, the so-called unearned increment on land, together with interest and other overheads pertaining to land, have been excluded.

The unearned increment on land is the difference between our estimate, namely, \$3,705,874, and the cost of right of way and real estate, namely, \$807,331.

The other entries in this line are the interest on this unearned increment, and the other overheads, using the same percentages that have been used throughout our estimate for this system.

At the bottom of table III is given a summary which shows that our total estimate, excluding unearned increment, that is to say, putting in the right of way and other real estate at cost, is \$35,400,596, which compares with a total of \$37,424,653, based on the Grand Trunk Pacific statement submitted to the Government. In other words, our estimate of the cost to reproduce the Prairie section main line of the Grand Trunk Pacific using, however, the cost figures for real estate, is about \$2,000,000 less than the actual cost.

In a similar manner table IV summarizes the figures for the Mountain section of the Grand Trunk Pacific, as shown in table II, which shows that our total estimate, excluding unearned increment as in table III, is \$83,290,416, which compares with a total of \$93,307,184, based on the Grand Trunk Pacific statement submitted to the Government.

In order to compare these figures, however, it is further proposed to eliminate the interest charges, which are quite different in the cost estimate and in our own valuation. The comparison is made in tables V and VI. The former in the Prairie section, the latter in the Mountain section.

Taking up table V, line 1 shows the construction cost from table I, first including the land, and second, omitting the land. Our estimate including the land but not the interest is \$35,622,893. Our allowance for interest is \$3,140,401. Our total, including interest and all overheads, is \$38,763,294, agreeing with table I.

The Government figures, however, have offset against interest paid, receipts from operation of trains, from telegraph and certain items of stock as shown, while our estimate has taken account of none of these items.

Leaving out the land, it will be seen that our total figure for the Prairie section is about \$2,000,000 less than the Grand Trunk Pacific figure after the deduction above referred to has been made, while including land (and its unearned increment) we are \$1,300,000 above the company's figure.

Table VI makes similar comparison for the Mountain section, which shows our total, excluding land but including interest and other overheads, is about \$10,200,000 less than the estimate of the company, while after making the company's deductions for receipts and stock our estimate is about \$10,000,000 less than the company's.

If our figures are correct, therefore, the Grand Trunk Pacific system should have been built for nearly \$12,000,000 less than it actually cost.

Just why there should have been this excess of cost is not for me to explain, although it would appear that some of the prices paid were higher than should have been paid.

It will be observed that our estimate of the cost of reproduction of the Prairie section of the Grand Trunk Pacific, excluding the unearned increment on land, is about \$38,500 per mile, including all overheads. This is considerably larger than our estimate for the Canadian Northern Prairie lines.

The reason for the difference lies partly in the character of the country through which the Grand Trunk Pacific passes, which is less favourable for construction than that through which the other line passes, and partly also in the fact that the gradients on the Grand Trunk Pacific are lower than those of the Canadian Northern Railway. If the Grand Trunk Pacific had been built with a more undulating gradient, the quantity and cost of grading would have been considerably reduced, and also the cost of bridges, and especially of timber trestles, of which this line has a large number of costly ones.

On the whole also, the Prairie section of the Grand Trunk Pacific is more substantially constructed in many ways than the Canadian Northern; it has in general more ballast, better ties, and wider shoulders to the banks than the Canadian Northern, and I should expect for this reason alone a considerable difference in cost. I may say, however, that it seems to me, after riding through the territory covered by these lines, that the Grand Trunk Pacific was a more expensive line than was justified by the traffic, and that a more undulating gradient with a smaller first cost, would have produced economically just as good results.

On the Mountain section considered as a whole, however, the Canadian Northern line is not inferior to the Grand Trunk Pacific, but in some respects superior; its roadbed is good, its grades are easy, and it is in every way well constructed.

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Between Edmonton and Resplendent the two lines are closely parallel, and here the Grand Trunk Pacific is on the whole the more substantially constructed line, and the more economical to operate. Its grades are lighter, it has less rise and fall, and less curvature, avoiding one summit which occurs on the Canadian Northern east of Jasper. On the whole, the Grand Trunk Pacific is, between these two points, the better line, although it has longer and higher trestles, and experiences considerable trouble each year where it passes along Brulé lake, near Jasper, on account of the drifting of sand from the river-bed, which completely covers the tracks and requires considerable expense for removal. The Canadian Northern line is, at this point, on the opposite side of the river, and the prevailing winds are in its favour, blowing the sand away rather than upon its tracks.

West of Resplendent the two lines diverge, the Canadian Northern following the North Thompson river southward, and the Grand Trunk Pacific following the Fraser river in a northwesterly direction. The two lines thus pass through essentially different country, and cannot fairly be directly compared. The character of the country traversed by the Canadian Northern is the more favourable, and the portion of the Canadian Northern from Resplendent to the coast is the best part of that line. The grades are easy and the road-bed and structures substantial. The Grand Trunk Pacific west of Resplendent passes through some very soft ground, as far west as Hazelton. This material has been a serious source of expense to the Grand Trunk Pacific, and will continue to be for some years to come. Not only was it necessary to change the original location in many instances, but in many cases almost an entire hillside was put in motion by the construction of the road, filling up ditches and cuts and moving embankments, requiring heavy expense for excavation, subsequent to the opening of the line. The movement has not stopped, and there will continue to be heavy expense for some time to come. Here again the general limits adopted for grades and curves probably greatly increased the expense. Had an undulating grade been adopted, with more curvature, the line would have cost much less.

The Grand Trunk Pacific line is located generally on the south side of the rivers which it follows between Yellowhead pass and Hazelton. South of the line there is a range of hills and as the line is on the south side of the rivers it is not exposed to the sun as much as the land on the north side and, consequently, cuts do not dry out as quickly as they would if the line had been located on the north side.

At first glance it would seem that an error in location had been made and that the railway should have been located on the north side, but snap judgments are dangerous, and I would not wish to make the above statement unconditionally without further information as to the actual character of the ground on the north side of the river.

Tables VII and VIII give our final consolidated figures for the Grand Trunk Pacific and the Grand Trunk Pacific Branch Lines Company (the distinct corporation owning the branches of the Grand Trunk Pacific system). No account has been taken of subsidiary corporations of the Grand Trunk Pacific Company, such as the Grand Trunk Pacific Development Company and the Grand Trunk Pacific Steamship Company. Our attention has been confined entirely to the railroad lines scheduled in tables VII and VIII.

III.

In addition to making the estimate for the Canadian Northern and the Grand Trunk Pacific, we were asked to make comparisons between certain portions of these lines and portions of the Canadian Pacific system running through similar territory.

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(a) A COMPARISON BETWEEN THE CANADIAN NORTHERN LINE AND THE CANADIAN PACIFIC LINE BETWEEN KAMLOOPS AND VANCOUVER.

These two lines parallel each other between these two points, sometimes on opposite sides of the river and sometimes on the same side.

A comparative study of these two lines between the points mentioned were made by Mr. C. S. Gzowski; he submits the following typical unit showing his estimate of the cost of the Canadian Northern line to be \$88,230 per mile, and of the Canadian Pacific Railway line \$95,252, a difference of about \$7,000 per mile.

The Canadian Pacific has somewhat heavier grading, heavier rail, more ballast, and a larger length of second or auxiliary track; while the Canadian Northern line has greater expense for bridges and tunnels. Mr. Gzowski's interesting report with reference to this comparison is appended hereto.

(b) A COMPARISON BETWEEN CERTAIN PRAIRIE LINES OF THE CANADIAN NORTHERN, GRAND TRUNK PACIFIC, AND CANADIAN PACIFIC.

This comparison is shown in the following table.¹ It will be observed that of these lines the Grand Trunk Pacific is the most costly per mile, with the Canadian Pacific next and the Canadian Northern lowest.

It will be observed that the Grand Trunk Pacific has the lowest grades, and this fact probably explains the higher cost. These comparisons have been made by Mr. G. R. Balloch, who was in charge of field examination of the Prairie lines of the Canadian Northern System.

(c) A COMPARISON BETWEEN THE CANADIAN PACIFIC, CANADIAN NORTHERN AND GRAND TRUNK PACIFIC, BETWEEN WINNIPEG AND BRANDON.

The following table¹ gives a comparison of these lines by Mr. G. R. Balloch, from which it will appear that the Canadian Pacific is the most expensive, the Grand Trunk Pacific next, and the Canadian Northern the lowest.

(d) The following table¹ gives some further comparisons of similarly situated lines.

GEORGE F. SWAIN.

OTTAWA, March 15, 1917.

Prof. GEO. F. SWAIN,
Boston, Mass.

DEAR SIR,—The following brief report of my work in connection with your valuation of some of the railroads in the Dominion of Canada, is handed you herewith.

After some preliminary negotiations with you, I came to Ottawa September 6, 1916, and proceeded at once, with your approval, to engage a force of men and to make such plans and arrangements as were necessary to have the various lines inspected before snow came to seriously interfere with the work. Much difficulty and delay was experienced in organizing the force on account of so many capable men having gone to the war or being engaged in other work. The short period of employment offered would not induce men to leave other jobs, so that it required much correspondence and time to secure the force. Most of the men had not had previous experience in work of this character, so that considerable time and detailed instruction were required in order to have them all do the work uniformly and expeditiously. It soon became apparent

¹ These tables are shown on pages 72, 73, and 74.

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that details of the property of the railway would not be available for the field engineers during their inspection, if the same was made prior to the coming of snow. Therefore, it was necessary to send the field engineers over the lines with incomplete data. Profiles had been received from the company for a considerable part of the line; bridge, building, and track lists for an inconsiderable part; together with a few yard and bridge plans. The yard plans furnished at that time did not show the limits of the right of way, and many of those furnished were incorrect in respect to the data which they did contain. The profiles did not contain all of the data usually found on a complete construction profile, so that they were not of as much assistance to the engineers as expected.

As soon as profiles were received, the assistant engineers were set to work making profile estimates of quantities, using scales for the purpose. They also estimated from profiles quantities for wooden trestles, box culverts, pipe drains and similar items. These estimates were tabulated, and were ready for the inspecting engineers when they returned to the office. The assistant engineers engaged in the above work, assisted the field engineers in the preparation of their estimates.

On the 16th of October, the field engineers were sent into the field with such information as was then at hand. The territory was divided between six divisional engineers, some of them having assistants, in such manner that it was believed they could make the inspection before the snow came. A much larger mileage of the prairie lines was given to the engineers in charge of the same than in the case of the more varied and costly lines in the mountain region and in the east. A general inspection trip reaching as far west as Vancouver was made by the consulting engineer and chief engineer, Mr. W. B. Kellett, special engineer, and Mr. D. O. Johnson, contractor. Some of the field engineers accompanied this party over part of their territory, and some of the detailed inspection was made by this special party, thus breaking in the divisional engineers into the method of doing their work. Furthermore, this special party made careful inquiry and determined tentative prices for various classes of work and various kinds of material. These prices were the result of much consideration and were considered as tentative only, to be modified slightly by the divisional engineers in the light of such further information as they secured.

The field engineers covered practically all the lines of the railway, making as many detailed notes as possible, relative to all elements of the construction. From these notes, aided by the profiles and other data submitted by the railway company, the final estimates of the various lines were prepared. Details are given below regarding the various items entering into the railway construction, classified in accordance with the railway accountant's classification.

Right of Way.—General notes regarding right of way were made, showing the average width of right of way, and the extra amount at stations or other places, and also approximate estimates of the value of adjoining land. These values were later modified as necessary, from further information gathered whenever and wherever opportunity offered.

At all of the larger towns and cities, special investigations were made concerning land values, subsequent to the general road inspection, as at Montreal, Toronto, Ottawa, Winnipeg, Edmonton, and Calgary, where a most careful inquiry was made by a special engineer, taking into account values of adjoining property, assessed values, etc. Local residents and real estate dealers were consulted regarding the values, and from all this information, proper figures to apply to the property of the railway company were arrived at. At other important points not mentioned above, the divisional engineer pursued the same method, as far as time permitted.

The amount of right of way was in general determined as that acreage which the usual width of right of way would give per mile, plus an allowance made for the average extra amount at stations and terminals proportioned for the whole mileage of each line in question. After the determinations had been made, the incomplete right of way

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plans were received from the railway company, which were examined and totaled and the result compared with the previous determinations, and it was found that there were inconsequential differences, and no changes were made in our previous determinations except in a few instances.

No attempt whatever has been made, or could be made in the allotted time, to determine whether property claimed by the railway company is actually possessed by it. A few instances have come to our notice where property claimed has not been duly transferred to the railway company, but it is presumed that such instances are few. The general principle adopted concerning ordinary right of way was that the cost to the railway company of reproduction, would be approximately twice the amount per acre of the real value for farming and industrial purposes of the adjoining land, such increment including cost of acquisition, as well as the special engineering expenses, and also any damages, payments for severance or other reasons. No account whatever was taken of cases where land had been given to the railway company by the Government or individuals. Where land values are high in the larger towns and cities, where it is generally purchased by the lot a value per lot or per foot front, or per square foot was determined from various methods previously described and an increment of 25 per cent generally applied and in most cases, further allowances made for taxes, well as an interest carrying charge. No additional overheads were added to the appraised value of land as determined in this manner.

Grading.—Quantities were obtained in all cases where possible from an estimate made from the profile as modified by the field engineers. In very rough territory, such as Fraser Canyon and mountain work, where the quantities for each cut and fill were shown on the profile, the field engineer travelled such territory slowly and determined in each case, by approximate methods, if the quantities were reasonable, and if so, they were accepted by him. Every effort was made, however, to arrive at an approximate classification, and determine, as nearly as possible, whether the work was of a side-borrow nature or a cut and full nature involving long hauls or where train fill had been necessary. The location of ballast pits was noted where possible, and also the slope of the ground surface at cuts, in order to be able to make profile estimate quantities from a single line profile. Notes were made of the length of line requiring clearing and grubbing.

Tunnels—Special study was given to each tunnel to determine whether any unusual features existed. Detailed information was always available or secured, relating to the comparatively few tunnels on the line.

Bridges, trestles, and culverts.—The inspecting engineers made notes relative to all bridges and trestles, this data being later supplemented by detailed lists supplied by the railway company. Exact lengths were taken from the profiles. No effort was made by the field engineers to make notes relating to small openings, such as pipes and wood boxes. These were all estimated from the profiles.

An approximate method of determining the quantity of material in wooden bridges was necessary, because no information was supplied relating to the length of piles, in the case of pile bridges, and because time did not permit detailed estimates to be made of each bridge, even if sufficient information had been at hand to permit such detailed estimate. A formula was devised for determining quantities in wooden bridges based on information contained in standard plans and on detailed information of total quantities covering many bridges as submitted by the railroad company. In most cases, the quantities were given for steel bridges, but these quantities were roughly checked by comparison with diagrams prepared for such estimation. The masonry in bridges was determined from plans submitted by the company, but these were in general, entirely inadequate for the purpose, so that a general theoretical quantity for a pier or an abutment of the approximate height as determined from the profile was made. Every

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effort was made to be fair in this determination, and if our estimate is deficient in these matters, it is largely because the railroad company failed to submit suitable data for such estimates in time for use. The foundation work covering cofferdams, pumping, wet excavation, etc., has been estimated at a certain percentage of the cost of the masonry. The percentage to be used for this determination was arrived at from a careful study of numerous bridges where the actual cost of the foundation work was available on this and on other railroads and in other cases of similar work. The short time available necessitated approximate methods such as this, and if in special cases the result is deficient, it must be said again, that it is primarily because the railway company did not submit suitable plans and data in time to be available for use.

Track.—The estimation of the quantities of the various items entering into track is based on the notes of the engineers, showing number of tiers per rail length, weight of rail, the character of the fastenings and average amount of ballast per mile. The length of auxiliary tracks was determined from statements submitted by the railway company, and approximately checked by the inspecting engineer. The ratio of the total length of auxiliary tracks on a certain line to the main line mileage is determined, and that per cent of ties, rail and fastenings is added to the correct amount for one mile of main line track, making allowances for any different weight of rail in auxiliary tracks. The number of frogs and switches has been determined from the number of passing tracks and auxiliary tracks and other auxiliary tracks as noted by the engineer and from yard plans where the same had been checked by the engineer, or if his notes approximately correspond to the plan. The yard plans were only available to the inspecting engineers in a few instances. They were entirely lacking in the central territory, and it has been found that the number of turn-outs as estimated is uniformly less than the number now reported by the railroad company. This is due to the fact that the company did not supply us with plans or data early enough.

The roadway tools are estimated on the basis of one outfit for about eight miles of track in general. Some slight variance was made from this basis where more definite information was available, but in general, no data were available and the item was too small to deserve any particular attention under the circumstances.

Fencing.—The inspecting engineer noted the amount of each line fenced, and the character of the fence. Approximate estimates were also made of the amount of snow fence available, which at the time of inspection, was piled along the right of way in spots, but not set up. In general, our estimates made in this way agree fairly close with the statements submitted later by the railway company. The number of cattle-guards was determined from the number of highway crossings, as noted by the engineer.

Crossings and Signs.—The number of crossings, both highway and farm, was noted by the inspecting engineer, and the amount of plank in the crossing determined from standards for each crossing, it having been determined that the standard was approximately correct. The number of signs of various kinds has been determined somewhat arbitrarily based on the number of crossings, miles, bridges, etc., it having been observed that the proper number of these signs for these various purposes in general existed. Where they did not exist, the field engineer made notes concerning the same and they were omitted.

Interlocking.—Each interlocking plant was carefully noted by the inspecting engineer, together with its general character. It was found that they were practically all of the same general style and character. The plants were all treated on the same basis, making modifications solely on account of the angle of the crossing and type of the crossing frogs. The results were later checked with information supplied by the company.

Telegraph and Telephone Lines.—The inspecting engineer made suitable notes concerning the telegraph line, showing the number of poles per mile, number of wires,

whether of iron or copper, and other special features. An arbitrary addition of 10 per cent was made for instruments, etc., this being based on previous experience and more detailed estimates, covering not only the instruments and batteries but the master batteries at terminals, the switchboard apparatus and all other special apparatus, also the special cables at certain stations, extra wire and wiring at stations.

Station Buildings and Fixtures.—The field engineers made the necessary notes relative to all station buildings, noting them by classes and making note of any special features which were observed by them. They also noted all other roadway structures, such as tool-houses, dwelling-houses, etc. The railway company submitted carefully prepared statements showing all structures existing along all lines, which statements enabled us in some cases to correct apparent omissions in the notes or to reconcile statements. The lists from the railway company, however, were received at such a late date (about February 1) that they were not of as much help as would have been the case had they been in our hands during the inspection. Cost of reproduction of the various types of structures in different parts of the country was estimated by a man experienced in building construction, on rather a liberal basis, on account of the small amount of information available relative to foundations, grading, interior finish, and heating appliances, as well as furniture and fixtures. Since these estimates were made the railway company has submitted data relative to these structures, and it has been found that our estimates are from 10 to 25 per cent higher than those of the company; but it is quite possible that the railway figures do not always contain items of freight, superintendence, etc., and also their figures are based in many cases, if not all, on cost figures, and the buildings were constructed at a period when material and labour were less costly than at a time just prior to the war, it is thought that prices used in this estimate, for the reasons given, should be higher than the figures given by the railway company. These remarks also apply to general office buildings, water stations, fuel stations and the miscellaneous structures. Large and expensive stations or structures were examined independently and carefully and in most cases detailed plans were submitted and were carefully considered by the architectural engineer.

Shops, Water Stations, Fuel Stations, etc.—The field engineers made as careful inspection as time permitted of these structures, noting the location, the general character, and such detail notes as were necessary to make a reasonable estimate of cost. The same applies to all miscellaneous structures. In large yards, terminals in large cities, where there are numerous structures of all kinds, inspection was made on foot, such time as necessary being given to make careful notes regarding all structures.

Shop Machinery and Tools.—Very little information was available relative to shop machinery. The railway officials were asked in November to submit information relating to this item, but up to this time they have only done so in a few cases. When data were submitted by the railway company, and when the information submitted was judged approximately correct by the inspecting engineer, the figures as submitted were adopted. In many cases in the West, especially where no information was available, an arbitrary amount has been included in the estimate for this item.

Dock and Wharf Property.—There are very few items on the railway coming under this heading. They have been inspected by the field engineer and notes made of the same; and an estimate has been prepared from the plans submitted by the railway company as checked by the field engineers.

CONSTRUCTION OF THE ESTIMATE.

Our estimate of cost involves two things: the quantity of each item, and the unit price. Our quantities have been determined in the manner explained.

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In arriving at our unit prices, numerous sources have been consulted and considered, such as contractors on this road and other roads, opinions of men experienced in railroad construction, and also figures used in numerous other valuations and reports, making due allowance always for the location, the geography of the country, character of the work, etc. Very little information was supplied by the railway officers of this nature in time to be of any assistance to us, although they were repeatedly urged to submit data of this character. The unit price data which have been generally used with slight modifications is annexed to the report as an appendix.¹ Preparation of these data had the careful attention of the chief engineer, and was checked with all available data and discussed with several of the assistants most qualified in such matters, and was finally approved by the consulting engineer in charge. In cases where the divisional engineer thought that modifications should be made in the general prices, he was permitted to do so with the approval of the chief engineer in each case. It is quite likely that prices used are at variance, on certain lines or in some localities, with actual prices paid; but it seemed better for the sake of uniformity and consistency to adhere to what had been considered to be reasonable and fair prices, notwithstanding such differences.

In order to adopt a method by which quick results could be obtained and at the same time, a method by which easy comparisons could be made, and also the liability of error eliminated as much as possible, it was decided to make an estimate of each distinctive line on a mileage basis and this unit of value, for convenience called a typical unit, was then applied to the correct mileage of the line in question. It was possible to make determination originally of one mile of many items. In cases where this was not possible, such as grading, tunnels, bridges, stations, etc., a determination was made of the total quantity on the line and this total quantity divided by the mileage of the line produced the average amount per mile which appears in the "typical unit" under the proper classification along with the other items originally determined for one mile, and thus a proper amount per mile for each line was determined. The auxiliary tracks were determined to be a certain per cent of the total, and in each case this additional per cent of one mile has been taken into account for all track items, making due allowances where necessary for a different weight of rail in the auxiliary tracks. Two arbitrary items have been added to the measurable items falling under one or the other of the thirty accounting classifications, which are: (a) Maintenance and temporary work during construction; (b) solidification and adaptation or deferred construction. The first of these items has been estimated at \$250 per mile, which is based on figures used in other valuations and theoretical estimates of this cost. Concerning (b), the amount has generally been taken as \$200 plus one-thirtieth of the grading, because the items consist of track items which are nearly constant per mile and of grading and drainage items which vary with the amount of same. This amount has been reduced in cases where very little work coming under this heading appeared to have been done or where present conditions were very poor, and has been omitted entirely in some instances, such as on new lines.

The typical unit for a line having been thus prepared, a simple multiplication by the mileage of the line produces the basic value of the said line, to which are added the overheads on the percentage basis, thus producing the final estimate of the cost of reproduction.

The summary for each line is made on a card on the back of which is shown the total of the land and interest separately, and also the depreciation. The cards, about 125 in number, show complete consolidated information for the entire system, and are indexed and filed in a suitable box.

GENERAL.

The field inspection commenced on the 16th of October, 1916, and was substantially completed December 24, 1916, although the investigations relating to land values have

¹ Not printed.

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continued until March 1. At the same time that the field inspection was going on, assistant engineers were at work in the main office making profile estimates of quantities, grading and bridging, so that when the field engineers came into the office, these items were, in most cases, ready for them. The entire work of making up the typical unit for each and every line and estimating the special features has been accomplished in about six weeks, say from January 1 to February 15. Since the latter date, work has been largely consolidation, reviewing, checking, and consideration of a few large special items.

The railway company has sent representatives to the office to make comparisons of our results with their figures, and to discuss matters where substantial differences existed. The railway company, up to February 22, has not submitted any statements of original costs of complete lines except for one or two lines east of Port Arthur, so that comparisons with cost figures could not generally be made, except with reference to some special items. It appears now, that the work is practically completed, that the railway company will submit cost statements for most of the lines. It cannot be said at this time what the comparisons with such statements will disclose. During February the railway company has submitted many statements, covering approximately two-thirds of the lines, which give the quantities of most of the measurable items, but show no unit prices or original costs. The overheads, land, and some other items are shown for a lump sum. On some of these lines we have applied the same unit prices as were used in our estimate and thus made a complete estimate out of the railway company's incomplete statement. Where comparisons have been made in this manner, taking the railway company's estimate, deducting from the same its item of discount and also its item for interest, and then applying the same amount for interest as used in our estimate, it has been found that there are very slight differences between the estimates in general. The following items are generally higher in the railway company's estimates, either expressed in dollars or in quantities, than our estimates. Land, trestle timber, switches, farm gates, rail, ties, fastenings, ballast and interest. Our estimates are generally higher than the railway company's figures in grading, build-ings and engineering. Our higher grading figure and lower trestle timber figure is probably accounted for by numerous bridges having been filled in since the railway company's figures were made, which in most cases, are construction figures. Our lower figures in rail, ties, etc., are partly due to the railway company including industrial spurs in its statement, and generally our auxiliary track figures are slightly lower than those now shown by the railway company. Though there is not much difference regarding ballast, we believe that the railway company's figures are purely estimates, and that it has been entirely too liberal in making such estimates; at least, it is the opinion of our engineers that there is not nearly that amount of ballast on any of these lines as claimed by the railroad company. It is possible that the amount claimed has been put on at some time or other and much of it disappeared as ballast, having become incorporated in the road bed, in which case we have covered it by our item termed "solidification."

CONCLUSION.

My thanks are due to Sir Henry Drayton for much information and help, and for his interest in the matter; also the staff of engineers and assistants who have worked hard and faithfully. The Department of Railways and Canals detailed an inspecting engineer to assist us, who gave us much information relative to unit costs and costs of certain lines, and our thanks are due them for this valuable assistance.

Very truly,

WM. H. CHADBOURN.

SESSIONAL PAPER No. 20g

Prof. G. F. SWAIN,

in Charge of Valuation

Commission of Inquiry into

Railways and Transportation,

Ottawa, Ont.

*Comparison of Physical Values of Canadian Northern Railway and Canadian Pacific
Railway between Kamloops and Vancouver.*

I beg leave to submit the following report comparing the Canadian Pacific line and the Canadian Northern line between Kamloops and Vancouver.

Inspection of the portion of the Canadian Northern and Canadian Pacific between Kamloops and Vancouver was made October 30 to November 3, 1916, and December 15 and December 17, 1916, respectively.

Field work on the Canadian Northern Railway was done from an inspection motor with ample opportunity to stop at pleasure. Complete profiles showing details of pay quantities of material and notes of other items were at hand.

The Canadian Pacific railway was inspected from the rear end of regular trains. The profiles furnished having full information of tracks, etc., but no quantities of materials in grading or bridging shown.

Basis of Comparison.—In making the comparison of the roads, the terminal properties, yards, docks, etc., at Port Mann and Vancouver, as well as both railway company's properties and yards at Kamloops have been excluded.

At North Bend where the Canadian Pacific own a hotel and practically all of the town and buildings in it, only the yard proper and buildings which can strictly speaking be called railway structures, have been taken into account.

C.P.R. Route.—From Kamloops going west the Canadian Pacific Railway follows the south side of the Thompson river to the junction of this river with the Fraser river at the town of Lytton, and for six miles is on the south side of the Fraser river before it makes its only crossing to the north side, down which it runs to within 24 miles of Vancouver. The line then works over to the south arm of Burrard inlet at Port Moody, which was the original terminus of the road. From Port Moody the south shore of the inlet is followed into Vancouver.

The alignment of the Canadian Pacific Railway has a very large percentage of curvature with a maximum of $11^{\circ} 30'$ foot curves, which maximum, however, is used only in a few places.

The track at Kamloops is 1,050 feet in elevation above that at Vancouver, and although the railway is following a watershed, there are a number of adverse grades going west with a maximum grade in that direction of 1.1 per cent uncompensated, while eastbound the maximum grade is 1.3 per cent uncompensated.

C.N.R. Route.—The Canadian Northern Railway general route from Kamloops west is the same as the Canadian Pacific, following the Thompson and Fraser rivers to its terminus.

At Kamloops after crossing the North Thompson river it is on the north side of the Main Thompson river and crosses or recrosses it seven times before its junction with the Fraser, at Lytton where the railway is on the south side.

Where the Canadian Northern is on the south or same side as the Canadian Pacific it is between that road and the river, and in elevation somewhat lower.

Half a mile west of Lytton it crosses to the north side of the Fraser river, and after following that side for five miles crosses to the south side by a high crossing of the river and an overhead crossing of the Canadian Pacific Railway. Immediately

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below this point the Canadian Pacific has crossed to the north side, and from here west the Canadian Northern runs on the south bank to Port Mann while the Canadian Pacific follows the north.

Port Mann is the terminus of the road owned by the Canadian Northern Railway, but they have running rights over the Great Northern Railway and the Dominion Government Fraser River bridge over Fraser River Junction into Vancouver, and use the Great Northern station in Vancouver.

There is now under construction at Vancouver by the Canadian Northern Railway a station and yard facilities which will not be finished for some time, and no arrangements have been completed for their own track from Port Mann to Vancouver.

The alignment of the road, although having probably nearly as much curved track as the Canadian Pacific Railway, is of considerably flatter curvature, making the total angle of curves much smaller. The maximum degree of curve is eight degrees.

Going west there are no adverse grades except small velocity grades which can be neglected. Eastbound the maximum grade is 0.40 per cent compensated.

In general the ground traversed by the two railways might be considered the same.

General Comparison of Route.—Where the roads are on opposite sides of river, on the whole, the work would have the same quantities of material for equal alignment and gradient, although for short distances one is on a bench with lighter work necessary than that on the opposite side. This condition is reversed in the next stretch and about balances.

Both cover approximately an equal length of flat ground where work of grading is light.

The Canadian Northern Railway along the Thompson river, where it is on the same side as the Canadian Pacific Railway, crossed to avoid particularly heavy grading and did the bridging to get the less rugged side of the valley.

General Comparison of Roadway.—The general alignment of the Canadian Northern Railway being of flatter curves, necessitated having the line located further into the side hill and consequently had heavier grading than if located with the sharper curves used on the Canadian Pacific Railway. Also the lighter gradient used and no use of adverse grades made the work heavier than if the same grades as those of the Canadian Pacific Railway had been employed.

With the exception of some timber cribbing, three small trestles and a few wooden culverts, the Canadian Pacific has all road bed structures now built of a permanent character, that is to say, of steel, concrete or stone masonry.

The Canadian Northern Railway has considerable length of wooden trestles, some timber cribs and culverts.

Typical Unit Sheet.—Appended is typical unit of each road showing per mile value of each accounting item.

Unit Prices.—In making up valuation for each line, where the items were of the same kind and character, equal unit prices were used for both, where items varied in kind, prices as far as possible were based on equal conditions.

Length of Track.—The length of the lines, as compared, are: Canadian Northern Railway, 243.7; Canadian Pacific Railway, 250.5.

The latter from Kamloops station to Vancouver station. The Canadian Northern Railway from Kamloops station to Port Mann at Fraser River Junction, which is the end of this road and junction with the Dominion Government railway bridge across the Fraser river at New Westminster. It is 14.0 miles from this point to Vancouver over the Great Northern Railway, making the distance Kamloops to Vancouver 257.7 by the Canadian Northern Railway.

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The Canadian Northern Railway has 22.55 miles or 9.25 per cent of auxiliary tracks, while the Canadian Pacific Railway has 50.76 miles or 20.26 per cent of auxiliary tracks, and 89.97 miles or 35.93 per cent of double tracking, 8 miles of which is out of Kamloops and 81 miles out of Vancouver.

T.U. (2).

Right of Way and Station Grounds.—Each has about the same area, but that of the Canadian Pacific is probably worth more; the immediate territory being better developed, so 10 per cent more has been allowed the Canadian Pacific.

T.U. (4).

Clearing and Grubbing.—These items are the same for each road, the character of timbered country being alike.

Excavation and Embankment.—Having no actual pay quantities on the Canadian Pacific Railway the comparison is made in reference to the Canadian Northern Railway, which averaged 81,600 cubic yards per mile.

Dividing the ground into three classes of grading, light, heavy, and very heavy, and assuming the two roads traverse the same percentage of each, and that in each case for simple track grading the light and heavy work are the same yardage per mile but that the very heavy work on the Canadian Pacific Railway is two-thirds of yardage per mile of the Canadian Northern Railway, and that the Canadian Pacific double track is 110 per cent in quantities of the heavy work and the auxiliary track grading in quantities is 125 per cent of light work, we have about the same quantities per mile thus:—

Class of Grading for Ground Traversed.	CANADIAN NORTHERN RAILWAY.			CANADIAN PACIFIC RAILWAY.		
	Per cent of line.	At yards per mile single track.	Amount cubic yards.	Per cent of line.	At yards per mile single track.	Amount cubic yards.
Light.....	15	16,000	2,400	15	16,000	2,400
Heavy.....	25	48,000	12,000	25	48,000	12,000
Very heavy.....	60	109,000	65,400	60	72,600	43,600
	100		79,800	100		58,000
Double track.....				36	52,800	19,000
Auxiliary track.....	9	20,000	1,800	20	20,000	4,000
			81,600 cu. yds. per mile.			81,000 cu. yds. per mile.

Retaining Wall and Crib.—In the Canadian Northern Railway, 12 per cent of this item, or \$35 per mile, is wooden cribs, and the balance is retaining wall either of dry masonry or concrete. This item will be very much increased when the present wooden trestles are replaced with permanent work.

The Canadian Pacific amount is very heavy on account of the line having been located "out in the air" instead of well into the side hill—5 per cent of the amount, or about \$200 per mile, is cribbing; these cribs are mostly deflection cribs at the water's edge to divert the current from embankments.

T.U. (5).

Tunnels.—The Canadian Pacific Railway have twenty-nine tunnels in all; twenty-eight are through solid rock, one of which is a parallel one for double track; six of

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these are concrete or masonry lined, and two timber lined. One is a dirt tunnel, masonry and concrete lined. Total length of tunnelling is 10,629 feet.

There are thirty-four tunnels on the Canadian Northern Railway, two through dirt, and timber lined, and the others through solid rock, seven of which are full timber lined and eight partly timbered. The total length is 19,464 feet, or 83 per cent more length than the Canadian Pacific Railway.

T.U. (6).

Bridges.—The Canadian Northern Railway have 10,668 feet of steel bridges, all on concrete piers and abutments, 640 feet of wooden Howe truss spans on pile and crib piers. This bridging is mainly made up of the crossings of the Thompson and Fraser rivers; in all nine crossings.

The steel bridges on the Canadian Pacific Railway have a less total length than on the Canadian Northern Railway, being 7,882 lineal feet; most of them are on stone masonry piers and abutments, only a few having concrete substructures; over half are double-track structures. There is one crossing of the Fraser river, but the heaviest structure is a double-track bridge of thirteen spans, with one swing, across the Pit river. Besides the steel bridges there are three stone arches of 81-, 54-, and 30-foot spans.

Trestles.—There are 31,380 feet of trestles on the Canadian Northern Railway, mostly crossing small ravines, but are *grasshoppers*, replacing what will eventually be fills with retaining wall.

This is the main item which takes from the permanency of the Canadian Northern railway line as compared with the Canadian Pacific Railway, and to make it favourably comparable to that road will increase the retaining wall item materially and further increase steel bridges.

Trestles on the Canadian Pacific railway are a very unimportant item, consisting of only five small structures with a total length of 585 lineal feet; three of these are constructed of creosoted timber and piles.

Culverts.—About half this item on the Canadian Northern is for cedar box culverts for smaller drainages. The balance is for concrete culverts and tunnels in solid rock, driven under the roadway for the heavier drainage. This item, to compare with the Canadian Pacific Railway for permanency, would be increased considerably; partly in replacing wooden culverts but largely for drainage where some present trestles would be filled.

The Canadian Pacific Railway culvert item has about 7 per cent for wooden boxes, a great number are track ballast boxes, and a very few culverts through the dump. A considerable part of the drainage is taken care of by stone or concrete arches and there are a lot of rail concrete culverts, besides concrete boxes, stone boxes, concrete, iron and tile piping.

The total item for bridges, made up of spans, trestles and culverts, is larger on the Canadian Northern railway on account of the number of main river crossings and eventually will have to be considerably increased.

T.U. 7-8-9-10 and 12.

The items for ties, rails, frogs and switches, track fastening and track laying which may all be treated with the same comment, are greater on the Canadian Pacific railway, mainly because of 36 per cent of double and 10 per cent more auxiliary tracks, but partly by the fact that 75 per cent of the Canadian Pacific railway of main line track is 85-pound and the balance 80-pound against the Canadian Northern railway all 80-pound track. The Canadian Pacific auxiliary track is 56-pound or 60-pound rail, while the Canadian Northern railway is almost all 80-pound.

T.U. (11).

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The ballast on the Canadian Northern railway has as many yards per mile as the Canadian Pacific railway, but the latter is largely increased by the greater length of subsidiary tracks and 80 miles of double track rock ballast.

T.U. (13).

The Canadian Pacific has a larger equipment of roadway tools.

T.U. (14).

Each road is about 50 per cent fenced, but the Canadian Northern Railway have a few more gates, and this increases their amount.

T.U. (15).

Crossings and signs with the Canadian Pacific railway is greater because they have three subway road crossings, while the Canadian Northern railway have none.

T.U. (16).

In interlocking and other signal apparatus, the Canadian Northern Railway has a diamond crossing with interlocking plant with the British Columbia Electric Railway, and the Canadian Pacific Railway are the senior road in the only level crossing they make with the Great Northern Railway.

T.U. (17).

The Canadian Pacific Railway have either three or four cross-arms on their telegraph line with 11 to 29 iron wires and two copper wires, against the Canadian Northern Railway's one cross-arm with two iron wires.

T.U. 18-19-20-21-22-23-31.

Buildings and various structures on the Canadian Pacific Railway are somewhat more complete and greater in number, accounting for the larger amounts in station buildings and the balance of the typical units.

Maintenance of temporary work during construction are on each road the same, but for solidification and adaptation the Canadian Pacific Railway, being more matured, is counted higher.

Overhead.—If, for purposes of reproduction value, the conditions of construction are considered the same, overhead charges need not be compared as they would be proportional.

Conclusion.—No account is taken of depreciation on either road, although that of the Canadian Pacific Railway would, in some items, be considerably more than the Canadian Northern Railway, particularly in buildings; it would be largely offset by their bed and track being kept up in excellent condition and their roadbed structures being of substantial character. On the whole, there would be no material difference between them.

As to their total physical reproduction value, by the accompanying estimate it would appear the Canadian Pacific Railway is greater by some \$7,022 per mile, or 7 per cent. This excludes, as before noted, terminal properties, etc., which on the Canadian Pacific Railway are very comprehensive.

Operating features.—The operating features have not been gone into, but if this were done the main considerations would be the advantages of the Canadian Northern Railway has of no adverse grades westbound, a lighter ruling grade eastbound, less total elevation to overcome and less and flatter curvature; while the Canadian Pacific Railway has the advantage with 36 per cent of double track line, some better ballast, partly heavier rail and, consequently, better track, the roadbed more consolidated, and better facilities for doing business.

The lack of detailed information of quantities of material moved in grading and particulars of substructures in bridging on the Canadian Pacific Railway and the hurried inspection on that road as well as the short time available for computations, makes the comparison lack the finality one would desire.

Respectfully submitted,

March 10, 1917.

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C. S. GZOWSKI.

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COMMISSION OF INQUIRY INTO RAILWAYS AND TRANSPORTATION.

TYPICAL UNIT.

C. P. R. and C. N. R., Kamloops and Vancouver.

		Single Track		C. N. R. miles	C. P. R. miles
		Main line	Double track		
		Auxiliary track	9.25%	35.93%	20.26%
			\$	\$	
2	Right of way and station grounds		3,248	3,573	
3	Real estate				
		C. N. R.	C. P. R.		
4	Grading	\$	\$		
	Clearing and grubbing	1,544	1,544		
	Grading (except retaining walls)	49,160	49,160		
	Cribbing, retaining walls, etc	291	3,750	50,995	54,454
5	Tunnels			7,288	4,169
6	Bridges	\$	\$		
	Trestles	2,230	66		
	Culverts, pipes and drains, etc	1,090	2,013	12,929	10,571
7	Ties				
	Bridge ties				
	Switch ties			1,765	2,308
8	Rail (pounds)	tons at \$	per ton	5,536	7,747
9	Frogs and switches			69	153
10	Track fastenings and other material—				
	% A bars at \$	per mile	= \$		
	% bolts at \$	per mile	= \$		
	Spikes	ties at	pounds		
	per tie =	cwt. at \$	per cwt. = \$		
	Tie plates per mile at	each = \$		1,040	2,049
11	Ballast	cubic yards per mile at	per cubic yard in place	1,732	3,553
12	Track-laying and surfacing	per cent of a mile at \$	per mile,		
	plus (for laying) of a turnout at \$	each		751	1,146
13	Roadway tools, 1 outfit at \$	divided by		21	82
14	Fencing—right of way	fence miles at	per mile	403	372
15	Crossings and signs			29	270
16	Interlocking and other signal apparatus	per cent station semaphore at \$		19	26
17	Telegraph and telephone lines—1 mile at \$	plus	per cent for		
	instruments, etc			307	755
	Station buildings and fixtures			267	529
19	General office buildings				
20	Shops, etc			139	250
21	Shop machinery			41	51
22	Water stations			255	289
23	Fuel stations			4	151
31	Miscellaneous structures			118	924
	Maintenance and temporary work during construction			250	250
	Solidification and adaptation or deferred construction: C. N. R. 200 plus 1/60				
	grading: C. P. R. 200 plus 1/30 grading			1,024	1,630
Total				88,230	95,252

NOTE.—Where details are not shown, they may be found in detail book.

Comparison between the following lines:—

1. C. P. R., Saskatoon—Macklin.
2. C. N. R., Saskatoon—Munson Junction.
3. C. N. R., Warman—Vermilion.
4. G. T. P., Biggar—Battle River.

NOTE.—Grades are actual, not virtual.

Line No.	C. P. R.	C. N. R.	C. N. R.	G. T. P.
	1	2	3	4
Number of tracks	1	1	1	1
Length of road in miles	161.7	303.5	206.5	150.0
Auxiliary track, per cent of main line	23.2	10.3	11.6	17.6
Cost per mile	\$31,577	\$22,125	\$27,664	\$39,681
Grades, westbound	1.0	1.0	0.75	0.5
" eastbound	1.12	1.0	0.5	0.4

G. R. B., March 8, 1917.

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Comparison between the C.P.R. and C.N.R. and G.T.P. between Winnipeg and Brandon.
In all cases the Winnipeg and Brandon terminals and Portage la Prairie land are omitted.
The C.P.R. is double track, the C.N.R. and G.T.P. are single track.

NOTE.—Grades are actual, not virtual.

	C.P.R.	C.N.R.	G.T.P.
Number of tracks.....	2	1	1
Length of road in miles.....	133.0	135.7	129.4
Auxiliary track, per cent of main line.....	15.25	11.0	22.2
Cost per mile.....	\$45,353	\$26,205	\$37,910
Grades, westbound.....	1.75	0.9	0.7
" eastbound.....	0.771	0.9	0.92

G.R.B., March 8, 1917.

SUMMARY OF COMPARISONS.

<i>Canadian Northern Railway</i> .—Capreol—Current, 593 miles (including yard, tunnel, shop and machinery). Grade: 0.4 eastbound, 0.6 westbound.....	\$34,816 00
<i>Canadian Northern Railway</i> .—Nipigon—Current, 69 miles (including yards, tunnel, shops and machinery). Grade: 0.4 eastbound, 0.6 westbound. Sidings, 4.8 miles, 107 per cent.....	38,645 00
<i>Canadian Pacific Railway</i> .—Nipigon—Current (Nipigon subdivision), 65 miles—including allowance per mile for complete yard at Chapleau; double track, 6 miles, 9.3 per cent. Sidings, 14.3 per cent. Grade, 1 per cent.....	45,460 00
<i>Canadian Pacific Railway</i> .—Mile 20—40 (Nipigon subdivision), 20 miles—including allowance per mile for Chapleau yard double track, 13 miles, 65 per cent. Sidings, 3.25 miles, 16.2 per cent.....	60,048 00
Average of above sections of Canadian Pacific Railway.....	52,754 00

NOTE:—

Canadian Northern Railway.—Capreol—Current, 593 miles, sidings, 52.9 miles.....	8.9%
Canadian Pacific Railway.—Sudbury—Current, 550 miles; double track, 168 miles.....	30.5%
Sidings, 110 miles.....	20%

SUMMARY OF COMPARISON—C.P.R. and C.N.R. SUDBURY AND CAPREOL TO CURRENT.

Field Inspection by T. S. Armstrong.

Grades—C.P.R. 1%.

C.N.R. 0.4% eastbound, 0.6% westbound.

	ESTIMATED COST OF RE- PRODUCTION PER MILE.	
	C.N.R.	C.P.R.
	\$	\$
<i>Nipigon—Current</i> , 69 miles— Single track, auxiliary track, 7 per cent.....	46,154	
<i>Nipigon—Current</i> , 65 miles— Double track, 9.3 per cent Auxiliary track, 14.3 per cent.....		59,061
<i>C.P.R., Mile Post 20—40— Nipigon Subdivision— Double track, 65 per cent Auxiliary track, 16.2 per cent.....</i>		78,045
<i>Capreol—Current</i> , 593 miles— Single track, Auxiliary track, 8.9 per cent.....	45,263	
<i>Sudbury—Current</i> , 550 miles— Double track, 30.5 miles Auxiliary track, 20 per cent Average of above two sections of C.P.R.....		68,426

In the above estimate allowance is made for yard trackage and facilities, shops, shop machinery, etc., in both cases.

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SUMMARY OF COMPARISON OF C.P.R. AND C.N.R., TORONTO-SUDBURY AND CAPREOL.

Field inspection by A. H. N. Bruce.	Grades: C.P.R. 0.5% max. C.N.R. 1.0% max.	Estimated cost of reproduction per mile.
<i>Toronto—Capreol C.N.R.—</i>		
Single track, auxiliary track, 9%		\$38,498
<i>Toronto—Romford Junction C.P.R.—</i>		
Single track, auxiliary track, 26%		\$61,958

APPENDIX B.

Examination of Mr. E. J. Chamberlin of the Grand Trunk and Grand Trunk Pacific Railways, at Montreal, on February 24, 1917.

(Extracts from shorthand report.)

E. J. CHAMBERLIN, sworn and examined:

Sir HENRY DRAYTON: Mr. Chamberlin, you have been asked to prepare a statement of the money required to keep things going, or an estimate of performances. Have you that statement prepared?

Mr. CHAMBERLIN: This statement I produce was made up by our Auditing Department.

Sir HENRY DRAYTON: This statement is an estimate merely?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: Which has been prepared for you, according to your instructions, for ten years, by your Audit Department?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The first column shows "Total Interest on Outstanding Bonds." That is as they now are?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The second column is headed "Less Interest on Three per cent Bonds, Mountain Section, Payable by the Government"?

Mr. CHAMBERLIN: That is correct.

Sir HENRY DRAYTON: The total amount of interest the Government ought to pay, according to that column, is \$9,930,000?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The total bond interest payable, as shown in the next column, coupled with the second column, will correspond with the total shown in the first column?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The fourth column shows "Interest on Government Loans to December 31, 1916"?

Mr. CHAMBERLIN: It does.

Sir HENRY DRAYTON: That is computed, I assume, on all Government loans over and above the bonds already referred to?

Mr. CHAMBERLIN: Yes. Those are different loans we had.

Sir HENRY DRAYTON: You do not know about the details?

Mr. CHAMBERLIN: No, I do not.

Sir HENRY DRAYTON: This statement was just prepared for you?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The next column is headed "Interest at 6 per cent on amount required to meet Deficits, and for Capital Expenditure." What does that really mean?

Mr. CHAMBERLIN: That means the deficit each year over Operating Expenses and Interest, and interest has been charged on it. For instance, the total requirements for the year 1917, as shown in the top line of the statement, amount to \$5,809,000. Interest has been charged on that into next year.

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Sir HENRY DRAYTON: It keeps accumulating, then, from year to year.

There is a footnote to the statement which says: "From the above, it would appear that we will require to raise loans amounting to \$65,887,110 to carry the property to December 31, 1926, but if requirements on Capital and Deficit Account were furnished by the Dominion Government without interest, the amount required would be \$32,145,000."

Mr. CHAMBERLIN: More than one-half of it is interest on advances that will be made in the future.

Sir HENRY DRAYTON: We really find a difference in this \$18,000,000 plus column?

Mr. CHAMBERLIN: I will let Mr. Ardley explain that.

Mr. ARDLEY: That big interest really represents paying interest on interest.

Mr. CHAMBERLIN: Interest on Advances from year to year. We must bear in mind that it is simply guesswork. One cannot tell how the country is going to develop, or how much the railway is going to earn.

Sir HENRY DRAYTON: What percentage of increase do you allow?

Mr. ARDLEY: Mr. Rosevear got that statement up. We have a supplementary statement which you may use to work on.

Mr. CHAMBERLIN: I thought you were going to give all that downstairs?

Mr. ARDLEY: We had not reached that point.

Sir HENRY DRAYTON: Are you satisfied that this is a fair estimate, Mr. Chamberlin?

Mr. CHAMBERLIN: I think so. It is a guess, as I have already said.

Sir HENRY DRAYTON: But it is the best guess you can make?

Mr. CHAMBERLIN: It is the best guess I can make now.

Sir HENRY DRAYTON: There is one other matter: You think that the Government as a matter of fairness to the Grand Trunk, ought to relieve the Grand Trunk Railway Company of its total Grand Trunk Pacific investment?

Mr. CHAMBERLIN: I do.

Sir HENRY DRAYTON: And repay to the Grand Trunk the money it has in the Grand Trunk Pacific, and relieve the company of all its responsibility. That is a large order. We want to give you every opportunity to state every ground on which you think that should be done.

Mr. CHAMBERLIN: Well, Sir Henry, if you will look at this map you will see where the Grand Trunk Pacific stretches away off up through the north country, while the Grand Trunk is away down in this part of the country. It is not a natural connection of the Grand Trunk, is it? It is not only not a connection of the Grand Trunk, but it is not of any benefit to the Grand Trunk.

In the first place, we are under contract to send all business over this north line, away from the Grand Trunk. The Grand Trunk cannot derive any benefit from it, under the contract with the Government.

Commissioner ACWORTH: That is a new point, to me.

Mr. CHAMBERLIN: In addition to that, the company is bound to put steamers on the Atlantic and steamers on the Pacific, to accommodate all that business, and yet it does not bring one dollar of business to the Grand Trunk.

Commissioner ACWORTH: How does that obligation arise?

Mr. CHAMBERLIN: It arises out of the contract with the Government.

Commissioner ACWORTH: The original contract with the Government?

Mr. CHAMBERLIN: The original contract.

Mr. BIGGAR: Of July 29, 1903.

Commissioner ACWORTH: Is the agreement a schedule to the Act?

Mr. BIGGAR: Yes, sir, a schedule to the Act of 1903. Chapter 80, I think it is.

Commissioner ACWORTH: Therefore, if the Grand Trunk, as it does at present, operate or control the operation of the Grand Trunk Pacific, were to send traffic through Portland instead of through Halifax, it would be a fraud on the agreement?

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Mr. CHAMBERLIN: Yes. We are bound to go on with all that tremendous outlay and to carry that load, and yet not get one dollar of benefit from it. The Grand Trunk simply cannot carry it.

Commissioner ACWORTH: Let me ask this question: When you went away from the agreement to work the Transcontinental, was that question of the obligation of the Grand Trunk Pacific to carry over the Transcontinental ever raised?

Mr. CHAMBERLIN: No. The agreement is with the Grand Trunk Pacific, not with the Transcontinental.

Commissioner ACWORTH: But it was practically Grand Trunk, rather than Grand Trunk Pacific?

Mr. CHAMBERLIN: It is in the name of the Grand Trunk Pacific, not of the Grand Trunk.

Commissioner ACWORTH: The Grand Trunk Pacific said they could not work the Transcontinental, with its present cost?

Mr. CHAMBERLIN: Yes.

Commissioner ACWORTH: And the Grand Trunk Pacific did not raise, and the Grand Trunk was not in a position to raise (that is what it comes to) the question of whether the obligation remaining on the Grand Trunk Pacific to run over the Transcontinental was a reasonable one?

Mr. CHAMBERLIN: Well, it was not raised, anyway.

Commissioner ACWORTH: I am an outsider, in regard to these matters, and have to pick them up as we go along.

Mr. CHAMBERLIN: The only body that could raise that question would be the Government, I should say.

Mr. BIGGAR: The only company which could raise any objection would be the Grand Trunk Pacific.

Commissioner ACWORTH: An obligation to operate via Halifax rather than via Portland is an obligation of the Grand Trunk, not of the Grand Trunk Pacific?

Mr. BIGGAR: Yes. It is provided for in the agreement dated the 29th of July, 1903, which is a schedule to chapter 71 of the Statutes of Canada, 1903.

Commissioner ACWORTH: The Act constituting the system?

Mr. BIGGAR: An Act confirming an agreement entered into between His Majesty the King and Sir Charles Rivers Wilson and others acting on behalf of the Grand Trunk Pacific Railway Company.

Clauses Nos. 41 to 45, inclusive, provide:

41. At all times during the terms of the said lease, the Company shall continuously and efficiently operate both divisions of the said railway, giving due and sufficient service for the accommodation of all traffic to the satisfaction of the Government.

42. It is hereby declared and agreed between the parties in this agreement that the aid herein provided for is granted by the Government of Canada for the express purpose of encouraging the development of Canadian trade and the transportation of goods through Canadian channels. The Company accepts the aid on these conditions, and agrees that all freight originating on the line of the railway, or its branches, not specifically routed otherwise by the shipper, shall, when destined for points in Canada, be carried entirely on Canadian territory, or between Canadian Inland Ports, and that the through rate on export traffic from the point of origin to the point of destination shall at no time be greater via Canadian Ports than via United States Ports, and that all such traffic, not specifically routed otherwise by the shipper, shall be carried to Canadian Ocean Ports.

43. The Company further agrees that it shall not, in any matter within its power, directly or indirectly advise or encourage the transportation of such

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freight by routes other than those above provided, but shall, in all respects, in good faith, use its utmost endeavours to fulfil the conditions upon which public aid is granted, namely—the development of trade through Canadian channels and Canadian Ocean Ports.

44. In respect of the tolls for any traffic carried partly over any line of railway operated by the Company and partly over any of the lines of the Intercolonial Railway, a fair and equitable ratable division of all such tolls shall be made by mutual agreement, or, in case of dispute, such division shall be fixed by arbitrators appointed in the manner provided by paragraph forty-seven of this agreement, or by a Board of Commissioners which may hereafter be duly appointed as mentioned in paragraph nineteen of this agreement, and with the right of appeal as therein mentioned.

45. The Company shall arrange for and provide, either by purchase, charter or otherwise, shipping connections upon both the Atlantic and Pacific Oceans sufficient in tonnage and in number of sailings to take care of and transport all its traffic, both inward and outward, at such ocean ports within Canada, upon the said line of railway, or upon the line of the Intercolonial Railway, as may be agreed upon from time to time, and the Company shall not divert, or, so far as it can lawfully prevent, permit to be diverted, to ports outside of Canada any traffic which it can lawfully influence or control, upon the ground that there is not a sufficient amount of shipping to transport such traffic from or to such Canadian ocean ports.

Mr. CHAMBERLIN: We are bound to make the same rates from Halifax and St. John as are made to Boston and Portland, and we are bound to provide steamships on the Atlantic and on the Pacific to take care of any business offering.

Commissioner ACWORTH: You never have provided ships on the Atlantic, in fact?

Mr. BIGGAR: No.

Commissioner ACWORTH: And the Government has never called on you to carry out your contract?

Mr. CHAMBERLIN: You talk about the money the Government would have to raise to pay off the Grand Trunk. They would not have to raise \$250,000. This has been financed on a three and four per cent basis except on loans from the Government, and I have offered to take the advances in Government bonds of ten or fifteen years.

Sir HENRY DRAYTON: But the obligation is there; the burden is there, and the carrying costs are there.

Mr. CHAMBERLIN: Yes, but it is really a matter of financing, to-day.

Sir HENRY DRAYTON: Your first point, Mr. Chamberlin, is that the Grand Trunk is not interested in all this development at all, and that the railway as contracted for and laid out is something which takes traffic away from the parent Grand Trunk System instead of giving traffic to it.

One answer that might be quite easily made to that is that the representatives of the Grand Trunk must have known all that when this contract was entered into?

Mr. CHAMBERLIN: I don't know. They must have. Of course, I do not want to criticise my predecessors.

Sir HENRY DRAYTON: What is the next ground?

Mr. CHAMBERLIN: What do you mean?

Sir HENRY DRAYTON: You have just advanced a reason why you think the Government should take the whole burden of the Grand Trunk Pacific away from the Grand Trunk Railway Company?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: That reason being that the position and the manner in which the line has been built, it is really for a separate system and not for the Grand Trunk System at all?

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Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: That is your first ground. Now what is the next ground?

Mr. CHAMBERLIN: Isn't that enough?

Sir HENRY DRAYTON: I don't know. You are the one to say. You are giving us all your grounds, and we want to give you every opportunity to advance every argument you can.

Mr. CHAMBERLIN: We can no more carry out that contract with the Government than anything in the world. How are we going to raise money to build those steamships? How are we going to build steamships? How are we going to carry the burden if we are forced to carry all that stuff all the way down there at Boston and Portland rates?

Sir HENRY DRAYTON: Your second ground is that of impossibility?

Mr. CHAMBERLIN: It is an impossibility.

Sir HENRY DRAYTON: If it is impossible now, it was always impossible?

Mr. CHAMBERLIN: It was always impossible.

Mr. BIGGAR: It was not thought to be impossible, by the men who made the contract.

Sir HENRY DRAYTON: I think it was.

Mr. BIGGAR: Of course Mr. Hays is now dead. He was very optimistic about it, we all know that.

Sir HENRY DRAYTON: Mr. Chamberlin, you have already, through Mr. Biggar, submitted a letter to this Investigating Commission, pointing out first that your scheme was a scheme for building from North Bay; secondly, that your scheme from North Bay was changed at the request of the Government; thirdly, that in the Railway Committee an amendment was forced which compelled the line to be carried from Quebec down to Moncton.

There is nothing more to be said in that connection is there?

Mr. CHAMBERLIN: Nothing more to be said, that I know of.

Sir HENRY DRAYTON: When the Government have already taken over the burden of the line from Quebec east, haven't they relieved you of every single trouble in that connection?

Mr. BIGGAR: The one fatal omission is the connection between the Grand Trunk Pacific and Ontario.

Sir HENRY DRAYTON: You mean, between the Grand Trunk Pacific and North Bay?

Mr. CHAMBERLIN: Practically that. The Grand Trunk System in Ontario to-day is not connected up.

Sir HENRY DRAYTON: This map of yours shows an alternate line dotted?

Mr. CHAMBERLIN: That was the original scheme.

Sir HENRY DRAYTON: That ties up to Sudbury?

Mr. CHAMBERLIN: That ties up to Sudbury, with a continuous line down to Midland I guess it is, or Allandale.

Sir HENRY DRAYTON: Mr. Biggar, do you want anything further said in so far as construction east of Winnipeg is concerned; you have some letters, Mr. Chamberlin, do you want to put any of them in the record?

Mr. CHAMBERLIN: I will leave that matter to Mr. Biggar.

Mr. BIGGAR: I think we had better put them in.

Sir HENRY DRAYTON: You gentlemen will have to determine yourselves what letters you want to put in.

Mr. CHAMBERLIN: I do not see any objection to putting them in, myself.

There is one particular piece of information to be brought out; that is, that the Grand Trunk officials of that day would never have gone into it if they had thought a competing line would be built alongside their line all the way through. They

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thought they would have a chance to go ahead for fifteen years, year after year. If they had thought that instead they would have had competition immediately all the way through, I am sure they never would have entered into the agreement.

Sir HENRY DRAYTON: Give us all your reasons why the Government should help, or why the Government should assist the Grand Trunk Pacific.

Mr. CHAMBERLIN: I say that the situation would not have been nearly as bad as it is now if the Government had not subsidized another line paralleling ours all the way through, to which they gave larger guarantees than they did to the Grand Trunk Pacific, and in addition gave them \$12,000 a mile cash.

Sir HENRY DRAYTON: Do you happen to know whether, in the negotiations between the Government and the Railway, the question of aids to other lines was discussed at all. You see your company has not got a provision or a stipulation from the Government that they would not do that which you now complain of. Do you know whether that question was discussed at all?

Mr. CHAMBERLIN: I cannot say as to that. Mr. Biggar can tell you, no doubt. I was not present and had nothing to do with the institution until it was well on to completion.

Sir HENRY DRAYTON: Was that question discussed at all, Mr. Biggar?

Mr. BIGGAR: Not as far as I know, Sir Henry. At the session at which the Canadian Northern was assisted between Winnipeg and Edmonton, it was presumed that that was to be as far as that line would go.

Sir HENRY DRAYTON: But it was contemplated that they would build to the coast?

Mr. BIGGAR: I don't think it was.

Sir HENRY DRAYTON: If I am not very much mistaken, negotiations were entered into between your executive and the executive of the Canadian Northern, looking to the fusion of the systems, so that there would not be this duplication.

Mr. CHAMBERLIN: They tried to buy the Manitoba lines, but they could not get together, Mr. Hays told me at one time, and Mr. Wainwright told me also. I asked them why they did not buy out the Canadian Northern. They said they had had meeting after meeting with them, and that the best terms they could get were that they assume all obligations, all bonds and everything else, and give \$25,000,000 for the common stock for that little bunch of lines up around Winnipeg.

Commissioner ACWORTH: Can you give us the date of that?

Mr. BIGGAR: That was in 1903.

Sir HENRY DRAYTON: It was in 1903 that those negotiations were going on?

Mr. BIGGAR: It was either in 1903 or 1904.

Sir HENRY DRAYTON: It was not very long after that before the Canadian Northern went on branching out?

Mr. BIGGAR: Where from?

Sir HENRY DRAYTON: From everywhere. They have been operating since 1903. I quite appreciate, Mr. Chamberlin, the point you make, that is, that your undertaking has been very much injured by another line. But wasn't it a case of the country being open for the two companies? There was no reason why the Government should not do it, if they wanted to?

Mr. CHAMBERLIN: I think there was, because our people looked upon it in this light, that they and the Government were partners, and that one partner would not do anything to injure the other.

Sir HENRY DRAYTON: But you know that the Canadian Northern to-day puts forward the same thing as against you, that they would have been in good shape to-day as a transcontinental line if the Government had not subsidized your company?

Mr. BIGGAR: But the Canadian Northern had not made any arrangement to go west of Edmonton prior to this agreement.

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Mr. CHAMBERLIN: Take their lines through British Columbia, and you will find that they took a line down the Thompson river and on to Vancouver which was approved by the Government. Mr. Hays wrote me to Winnipeg asking whether we should oppose it. I said no, if there isn't any other way of going to Vancouver than that, do not let us go.

Sir HENRY DRAYTON: What is your objection to that route?

Mr. CHAMBERLIN: The Thompson river, and those slides there. They had in 1903 a guarantee covering the line to the Prince Albert branch, running straight up north, apparently to Edmonton. They built their line into Edmonton, then did not do anything until 1908; 1903 was the year our charter was being obtained.

Mr. BIGGAR: Not only that, but our agreement with the Government on which the whole scheme is based, from Winnipeg to Prince Rupert, was made in 1903.

Sir HENRY DRAYTON: Can you really say more than this, Mr. Chamberlin, that although there was no agreement that the Government should not help any other line, you assumed that as a matter of good business the Government would not help any other line competing with you?

Mr. BIGGAR: West of Edmonton.

Mr. CHAMBERLIN: West of Edmonton or east of Port Arthur. In carrying out their arrangement with us in good faith, they could not consistently do that.

Sir HENRY DRAYTON: Why do you say, in good faith?

Mr. CHAMBERLIN: We were partners, and were opening up a new country which both sides knew was dependent upon the country filling up. There was nothing in it from one end to the other. You could ride for two days along our line without seeing a house. Then they put another line alongside of ours and divided the thing up.

Sir HENRY DRAYTON: But you are the interloper in prairie lines: surely your complaint if any is confined to the West, on the one hand?

Mr. CHAMBERLIN: So far as the Canadian Northern and the Canadian Pacific Railway are concerned?

Sir HENRY DRAYTON: I am now speaking of the Canadian Northern, not of the Canadian Pacific Railway. They always had the road. They got no bonuses for that. Take it from Edmonton west, and all the way down through; from Edmonton west you make the complaint as to the Canadian Northern, and as to Port Arthur east, but nowhere else is there anything on which you can make that point?

Mr. CHAMBERLIN: Of course they are paralleling our branch lines. That shows who was ahead, conclusively. The first year in which they did anything was 1908. Then they got an extra in 1910, 1911, 1912, 1914, and 1916.

Sir HENRY DRAYTON: You have written me a letter giving some grounds as to why the road should be taken over. We notice that there is a fairly good operating balance on the main line, but a very heavy operating loss on the branches?

Mr. CHAMBERLIN: Yes, but they get more than half of their business on branch lines.

Sir HENRY DRAYTON: The loss on the branch lines is more than compensated for by the long haul on the main line?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: You speak of confiscation, in your letter, Mr. Chamberlin. No person is thinking of confiscating the investment that I know of. If you can afford to carry it, you will be allowed to carry it. That was not really meant, was it? Suppose you are left to yourselves, the thing crashes, no one confiscates it. Isn't that right?

Mr. CHAMBERLIN: To a certain extent, yes.

Sir HENRY DRAYTON: To every extent, isn't it?

Mr. CHAMBERLIN: To every extent.

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Sir HENRY DRAYTON: You also mention in your letter that the money was put into the undertaking in good faith, and that it was a national undertaking. We have to look upon that more or less in the way these large terms are usually taken. It is only national to the extent that the agreement makes it?

Mr. CHAMBERLIN: Of course we are very anxious to avoid a break or a crash. The Grand Trunk has to raise a great deal of money, as you know in your department, for grade separations, improvements to hotels, etc.

Sir HENRY DRAYTON: I quite agree with that. You should be able to raise a great deal of money for the purchase of rolling stock and so on.

Mr. CHAMBERLIN: We have to. Of course the debenture stock is a first lien, and these guarantees are right behind the debenture stock.

Sir HENRY DRAYTON: Your point I take it is that it is impossible for the Grand Trunk to continue its service and raise money, under these circumstances?

Mr. CHAMBERLIN: Absolutely.

Sir HENRY DRAYTON: What do you desire to say in order to justify what you say in your letter about competing lines being subsidized?

Mr. CHAMBERLIN: In the first place, all our estimates were made on the basis of \$1.50 for labour, \$1.75 to make it safe. Labour is the principal part of the construction of a railway. The result was that with the other road working right alongside of us, especially west of Edmonton, we had to pay \$3.50 a day right along, and even then the men would not work. If we tried to crowd them and make them work, they would simply climb over the fence, so to speak, and go and work for the Canadian Northern.

Sir HENRY DRAYTON: But your position would be no worse in that respect than that of the Canadian Northern?

Mr. CHAMBERLIN: Not in that respect. Still it tremendously increased the cost of the road. In addition to that, all material was increased in price. The Canadian Pacific Railway was constructing feverishly all the time to keep up with the other two. That increased the cost of material away beyond any expectations. There were also duties put on everything after that contract was made, such as \$7 a ton on rails. So you see everything counted.

Sir HENRY DRAYTON: Is there anything you wish to say in justification of that part of your letter in which you speak of the course subsequently followed by the Government, and of the road never being built?

Mr. CHAMBERLIN: That is simply a statement of my judgment, that the officers of the Grand Trunk who made that arrangement with the Government never would have made it if they had known that their line was going to be paralleled. All our correspondence shows that.

Sir HENRY DRAYTON: Have you any correspondence you wish to produce which shows that?

Mr. CHAMBERLIN: Mr. Biggar has a lot here; he is getting it.

Sir HENRY DRAYTON: You had better put in whatever you want to put in.

Mr. CHAMBERLIN: We will give you the whole bunch.

Sir HENRY DRAYTON: Mr. Biggar is going to sort out whatever correspondence he desires to file in connection with this matter which will be put in as a separate exhibit.

I take it that you are not serious when you mention in your letter the repudiation of a legitimate indebtedness, the injury of the Grand Trunk Company's credit, hostile criticism, and so on. I quite appreciate your point, that if anything is done to injure the credit of the Grand Trunk, these consequences might follow. But there is no suggestion that I know of of the Government repudiating any of its legitimate indebtedness.

Mr. CHAMBERLIN: The idea is that if the Grand Trunk and the Grand Trunk Pacific go into insolvency (which they will have to do if the Grand Trunk attempts

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to carry out that arrangement) the Grand Trunk Pacific having been heralded and looked upon as a Government-backed road, it would naturally have an effect upon the other securities as well.

Sir HENRY DRAYTON: What I wanted to find out was, what was meant by the statement in the letter in regard to the repudiation of a legitimate indebtedness. There is no suggestion that the Government should repudiate any of its legitimate indebtedness. It is not a matter of repudiation.

Mr. CHAMBERLIN: If the Grand Trunk says it cannot go on with this undertaking, the Government of course will have to take it over—it could not help itself, on account of the guarantees. They would then wipe out \$30,000,000, \$30,000 a mile, and could wipe out, say, \$25,000,000 owing to the Grand Trunk. You see that, while they guaranteed the Grand Trunk \$13,000 a mile they guaranteed the Canadian Northern \$35,000 a mile.

Sir HENRY DRAYTON: The Government would do substantial justice if they took it over at \$35,000 a mile, to put on a parity?

Mr. CHAMBERLIN: Does that not reflect on the credit of the Government as well, a Government-backed road?

Sir HENRY DRAYTON: But they only backed it to the extent of the guarantees; your complaint is that they did not back it quite enough?

Mr. CHAMBERLIN: If the Grand Trunk Pacific goes to the wall, a Government road, everybody throughout the Northwest would say that the Government built it entirely too high.

Sir HENRY DRAYTON: Doesn't it really come down to this, that the statements in your letter mean that in your view, in order to protect the finances of the Grand Trunk, and as a corollary to protect the finances of the country, the Government ought to relieve the Grand Trunk in regard to its investment; isn't that the whole thing?

Mr. CHAMBERLIN: That is the whole thing.

Sir HENRY DRAYTON: There is nothing else to it?

Mr. CHAMBERLIN: Nothing else.

Commissioner ACWORTH: I can follow the point this far; that the Grand Trunk Pacific, being regarded as a Government obligation, the Government should see that anybody who had put money in to the Grand Trunk Pacific should be protected to the last penny. But wouldn't it be absolute justice on the part of the Government to say that the Grand Trunk went into this undertaking, and that the Government must ask the Grand Trunk to pay all it can towards the obligation the Government has to carry; in other words, that the Government must ask the Grand Trunk to accept the sinking of the \$26,000,000 they have already advanced, and that the Government must ask the company to contribute, in order to minimize the loss, all the net revenue the company has, that while it is not enough yet the Government must have that.

Mr. CHAMBERLIN: The fact is that the Grand Trunk is not able to contribute anything towards paying its own security holders and making the improvements the people of Canada demand and the business of Canada require.

Sir HENRY DRAYTON: But last year the Grand Trunk gave its shareholders half a million sterling?

Mr. CHAMBERLIN: Yes.

Commissioner ACWORTH: Do you mean to say that that was a necessary expenditure—I am not a shareholder?

Mr. CHAMBERLIN: If you strike off the interest on your securities . . .

Commissioner ACWORTH: It was not a security; they gave half a million to their guaranteed shareholders?

Mr. ARDLEY: Four per cent on the guaranteed stock was paid.

Commissioner ACWORTH: Which came to half a million sterling. Wouldn't it be absolute justice for the Government to say . . .

Mr. CHAMBERLIN: To wipe out these poor shareholders?

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Commissioner ACWORTH: To say to the Grand Trunk that they must pay these liabilities to whatever extent they can, because as far as the public was concerned the Government would have to face the rest, but that the Grand Trunk must do all it can?

Mr. CHAMBERLIN: The Grand Trunk can just about meet it, but cannot pay the shareholders anything.

Commissioner ACWORTH: It divided a profit last year of \$2,500,000?

Mr. CHAMBERLIN: You do not call it munificent, to pay interest on your guaranteed securities, do you?

Commissioner ACWORTH: But guaranteed stock is a share, not a bond. Are we agreed upon it, that the company divided a certain amount last year as a profit, a profit divisible as a dividend?

Mr. CHAMBERLIN: How about the first, second, and third preference stock?

Commissioner ACWORTH: Those holders would not get anything. For a series of years there has always been some amount paid as dividend?

Mr. CHAMBERLIN: We would not have paid so much last year, if we had paid out on the Grand Trunk as much as we ought to have paid for betterments.

Sir HENRY DRAYTON: If you had paid all you should have paid out for betterments, you would not have been likely to have paid anything?

Mr. CHAMBERLIN: No. We have not put in any rails for two years past, of any account.

Sir HENRY DRAYTON: How much do you think you should put in, to keep things right, in order to look after proper operations?

Mr. CHAMBERLIN: We should have at least three and perhaps four per cent put aside every year on rolling stock. That would amount to from \$2,000,000 to \$2,500,000.

Sir HENRY DRAYTON: You have never done that?

Mr. CHAMBERLIN: We have never done that. I have had it before the Board, and have practically insisted upon it being done whenever we get any new rolling stock. I bought about 10,000 cars the first year I was here. They were all charged to Capital Account. We should have had a reserve fund for taking care of them. We now have to go and do the same thing over again.

Sir HENRY DRAYTON: Supposing you were to reconstruct your accounts now; I want to see what effect these items would have on the Grand Trunk. What would the providing of three or four per cent annually amount to?

Mr. CHAMBERLIN: My idea is that it would take five per cent. Take engines and cars, they are either worn out or out of date in twenty years.

Sir HENRY DRAYTON: I agree with you absolutely. If you were to tell your accountants to go and make provision of that kind in respect of your equipment, on that basis, it would preclude the shareholders from receiving anything for years and years?

Mr. CHAMBERLIN: You mean, if we made it up for back years?

Sir HENRY DRAYTON: Yes.

Mr. CHAMBERLIN: Yes, it would. It would mean \$2,750,000 a year.

Sir HENRY DRAYTON: You would have to go back probably twenty years to make it right?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: To put your accounts in proper shape, in regard to a proper equipment, would require a reserve of \$25,000,000?

Mr. CHAMBERLIN: Take the matter of grade separation at Toronto, for instance . . .

Sir HENRY DRAYTON: Suppose you suggest \$27,000,000—wouldn't \$25,000,000 be enough to properly provide for reserves for equipment?

Mr. CHAMBERLIN: Yes, I think it would. We have now a lot of new equipment charged to capital: If we had \$25,000,000 now, it would put us in fine shape.

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Sir HENRY DRAYTON: To look after replacements and amortizations?

Mr. CHAMBERLIN: Yes, to do that.

Sir HENRY DRAYTON: To do that you should have that credit?

Mr. CHAMBERLIN: We could have that credit. That is one reason I am fighting so hard for that \$25,000,000. I want it to spend here on the Grand Trunk.

Commissioner ACWORTH: Apart from equipment, there is the question of road up-keep. You said you had not put any new rails during the past two years?

Mr. CHAMBERLIN: We put in quite a few in 1915, but in Canada we only put in 2,500 tons last year, because our friend Mr. Flavelle grabbed all the steel at the Soo, and would not let them roll any rails. We had them bought, and have them bought now. I have been trying to get them to let us have them now.

Commissioner ACWORTH: I don't know about 1916, but even in 1915 you did not put in very many new rails?

Mr. CHAMBERLIN: No, we did not.

Commissioner ACWORTH: And did not make a reserve for the money you would have spent if you had got the rails?

Mr. CHAMBERLIN: I do not mean to say that the rails are dangerous. But we must put in a certain percentage every year. If we go over a couple of years, the first thing we know we will have a lot of rotten rails.

Commissioner ACWORTH: Are you behind in your calculation on ties?

Mr. CHAMBERLIN: We have done pretty well on the tie question. We should have had a few more last year, but could not get them.

Commissioner ACWORTH: When you did not get them, you did not charge the money to Road Reserve in any shape or form that you might have charged?

Mr. CHAMBERLIN: No.

Sir HENRY DRAYTON: What do you put the life of a rail at, Mr. Chamberlin?

Mr. CHAMBERLIN: That is very hard to tell. It depends altogether upon the traffic. On one line a rail will last fifty years, while on another line it will not last five years.

Sir HENRY DRAYTON: Between Montreal and Toronto, say?

Mr. CHAMBERLIN: On that line the rails are 100-pound rails. I should say about ten years would be the life of those rails, although I have not had any statistics taken of them.

Sir HENRY DRAYTON: Only ten years for a 100-pound rail?

Mr. CHAMBERLIN: Yes, I should think about that.

Mr. ARDLEY: They would be useful on branch lines, after that.

Mr. CHAMBERLIN: We saw off the ends of them, and use them for branch lines.

Commissioner ACWORTH: I saw some figures this morning for eleven months, that is, eleven months as against the corresponding period of the previous year. The road maintenance costs have increased \$334,000 in cash, but the percentage dropped from 9.97 (which is practically 10) to 9.06, which is practically 9.

Mr. CHAMBERLIN: Mr. Ardley can explain that better than I can. A great deal of that is rails.

Commissioner ACWORTH: You have not been able to get them, and therefore have not charged them?

Mr. CHAMBERLIN: That is it.

Commissioner ACWORTH: Similarly in regard to equipment. The equipment for the eleven months to November, 1915, amounted to 16.69 of the expenses, while in 1916 it dropped to 11.62, or, in actual cash expended there has been \$328,000 of an increase. Does that mean the same thing again, that you could not get the equipment?

Mr. ARDLEY: That is operation for the eleven months, of the Grand Trunk. Of course I have not got the sheet before me, but I do not think we did as much repairing as we did in previous years.

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Mr. CHAMBERLIN: We have employed every man we could employ, and have worked full hours, something we never did before in winter time.

Mr. ARDLEY: If you examine the statements you will see exactly where the increase was.

Mr. CHAMBERLIN: Take Motive Power, \$53,000 up; Car Department \$24,000 up; Car Department, \$31,000 up; Car Department, \$25,000 up. You will see that the motive power went up to \$50,000.

Mr. ARDLEY: A lot of the increase in motive power represents the wages of engine-men and firemen, which do not go into Maintenance and Equipment. Of course we really do not come to a conclusion until the end of the year.

Commissioner ACWORTH: You accept the question as to Maintenance of Road?

Mr. ARDLEY: I can quite understand, because we have not had the rails to put in.

Commissioner ACWORTH: What about the Maintenance of Way?

Mr. ARDLEY: I think the Maintenance of Way will practically by the end of the year be about the same as last year.

Mr. CHAMBERLIN: If we had got those 17,500 tons, it would have meant \$600,000 for rails alone, let alone the new angle-bars, nuts, bolts, spikes, and labour taking them out. It would probably run to \$700,000 on that one item, if we had had them. But we could not get them.

Commissioner ACWORTH: And as you do not keep a reserve, you have not charged it up in cash?

Mr. CHAMBERLIN: No.

Sir HENRY DRAYTON: I see, discounts on securities sold, getting into Capital Account?

Mr. ARDLEY: We have always charged that account with that item.

Commissioner ACWORTH: Is that right?

Mr. ARDLEY: It is not right, under any Interstate Commerce Commission Law. They make us carry our discounts.

Commissioner ACWORTH: Is it right, as a matter of business?

Mr. ARDLEY: I don't know whether it is right as a matter of business. The only thing is, that our Debenture Stock is special. It does not appear in the statements.

Commissioner ACWORTH: Well, these things come home to roost in a very few years.

Mr. ARDLEY: The people in London say they won't do it that way, so we are going to do it, when they want it done that way.

Sir HENRY DRAYTON: Is there anything more you want to say, Mr. Chamberlin, on general principles, without going into details?

Mr. CHAMBERLIN: I don't think so.

Sir HENRY DRAYTON: There are no further reasons you wish to advance?



